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Econ 4564.1 Bd. April, 1888.

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FROM

Prof. F. W. Taussig.

15 Feb. 1888.

VI, 4633

BIMETALLISM IN EUROPE.

REPORTS

FROM THE

CONSULS OF THE UNITED STATES.

No. 87.—DECEMBER, 1887.

DEPARTMENT OF STATE
UNITED STATES OF AMERICA

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1887.

Money.
§ Double standard

BIMETALLISM IN EUROPE.

U. S. - Dep't of state. (1887.)

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~~VI, 4633~~
Econ 4564.1

FEB 15 1908

Prof. Taussig.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 87.—DECEMBER, 1887.

NOTE.

While the production, commerce, and general economic conditions of the precious metals have not been fully treated in the Consular Reports, there have been many references to these matters—references that would require much study and research to fully comprehend. To make good the omissions, and also to supply material for future reference, it has been deemed advisable to print Mr. Atkinson's report and Prof. Taussig's translation of Dr. Soetbeer's "Materialen" in the series of Consular Reports.

W. C. F.

Message from the President of the United States, transmitting letter of the Secretary of State inclosing report of Edward Atkinson on bimetallism in Europe.

To the Senate and House of Representatives:

I transmit herewith a communication from the Secretary of State, accompanied by the report of Mr. Edward Atkinson, of Massachusetts, who was specially designated by me, under the provisions of successive acts of Congress in that behalf, to visit the financial centers of Europe in order to ascertain the feasibility of establishing, by international arrangement, a fixity of ratio between the two precious metals in free coinage of both.

GROVER CLEVELAND.

EXECUTIVE MANSION,
Washington, December 20, 1887.

To the President:

In furtherance of the objects heretofore set forth in the resolutions of Congress to obtain an international ratio under which the use of bimetallic money should be secured, I have, under your instructions, kept in view the uniform purpose and policy indicated by Congress, and accordingly in March last, under your direction, I sought and obtained the services of Mr. Edward Atkinson, of Massachusetts, a gentleman especially qualified for the examination of public economies, to obtain abroad the information required for the elucidation of the important question referred to.

Mr. Atkinson was therefore instructed by me in substance, that you considered it your duty to obtain for the benefit of the American people the best information and most reliable knowledge on the subject to be had in the official and financial circles of the leading European states—notably, England, France, and Germany.

To this end, it was believed that, being especially accredited to the American ministers abroad, and aided by their introduction personally to such European officials with whom he might consider it discreet and expedient to consult, he should obtain the most intelligent and authoritative opinions upon the present status and probable future of the two metallic currencies, with a view to the retention of both the precious metals in full legal-tender coinage.

Mr. Atkinson's suggestion as to the probable increased use for silver coins to meet the expanding commercial demands of the new and vast semi-civilizations in both hemispheres, proceeding *pari passu* with their production of raw or partly manufactured materials, were considered impressive, and capable of being used with important effect in shaping that consensus of opinion among the commercial states which may enable them to arrive at a common ratio of acceptance of the two precious metals.

Mr. Atkinson was further informed that you felt it to be your duty to relax no effort to effect a co-operation among the leading commercial nations to establish such a fixed international ratio of universal equivalent between the two precious metals as will permit the free coinage of gold and silver alike.

The important duty thus indicated was undertaken by Mr. Atkinson, and every aid and facility given to him by this Department to enable him to accomplish satisfactorily the end in view.

Mr. Atkinson has executed the duties thus devolved upon him and made report thereon to you, which I have now the honor to submit, together with certain addenda which contain much information collected by him in relation to the subject.

It is believed that no contribution to the knowledge of this important subject will be found to be of greater value than that of Prof. Adolph Soetbeer, in his treatise upon "The materials towards the elucidation of the economic conditions affecting the precious metals and the question of standard value."

Following the earnest recommendation of Mr. Atkinson, I have obtained an accurate translation of this work by the hand of a distinguished scholar and political economist, Prof. F. W. Taussig, of Harvard University.

All of which is now respectfully submitted.

T. F. BAYARD.

DEPARTMENT OF STATE,
Washington, December 20, 1887.

BOSTON, MASS., *October* 1, 1887.

TO THE PRESIDENT:

SIR: Having been requested by you, through the Secretary of State, to visit Europe during the past summer in order to investigate the status of bimetallism, I beg leave to report:

Under instructions from the Department of State, I have visited London and Manchester, Paris, Berlin, Brussels, and Amsterdam, together with other places as circumstances or the necessity for interviews with persons of importance in this discussion have made it expedient.

I have met and consulted many of the financial ministers, the chief officers of all the national banks in the countries named, except one, namely, that of Holland; many officers of private banks and many bankers of distinction, most of the members of the Royal Gold and Silver Commission of Great Britain, which is now engaged in the examination of the same question, and lastly, many leading economists, statisticians, and legislators.

The resident ministers of the United States have rendered me every assistance in their power, and I have been everywhere received with the utmost courtesy and attention, as I have reported to the Secretary of State from time to time in detail.

Owing to the official positions which most of the gentlemen designated now hold, the necessary condition of a full and free exchange of views has been that I should quote no names or individual opinions in my official report. This renders it necessary for me to confine my report to the general conclusions which I have reached, without the citation of authorities.

In presenting this case for discussion, beginning early in June, my method has been as follows:

I have stated that the circumstances of the time in the United States, such as the payment of all the interest-bearing bonds which are now due, the impending contraction of the paper currency by the withdrawal of bank notes from circulation, the probable accumulation of the surplus revenue in the Treasury in the form of legal-tender United States notes or coin and other influences, might soon render important legislation an absolute necessity, both in respect to our monetary system as well as to the reduction of taxation. I next called attention to the fact that in the mean time this contraction of the paper currency might or must in almost any event continue long enough to render the circulating medium of the United States insufficient for the wants of the country. Therefore, a heavy and perhaps long continued draft for gold coin might be made upon the reserves of coin of Europe to fill the gap, which demand soon after began and has not yet ceased.

In view of such prospective legislation in the United States, I have stated that it had become very desirable to ascertain what changes in monetary legislation, if any, were likely to be made ere long in Europe; and it having been confidently represented in the United States that the bimetallic theory was making rapid progress, the main purpose of my mission had been to ascertain the facts. It being important that if any such action were about to be taken by the commercial and manufacturing states of Europe to restore the free coinage and full legal tender of silver at any agreed ratio of silver to gold, suitable measures might be advised by the Executive, or might be taken by the Congress of the United States, for concurrent action.

I have further stated that if the principal commercial and manufacturing states of Europe had no immediate intention of changing from the present status of a limited coinage of silver for subsidiary use, the standard of full legal tender being limited in practice to gold coin only, then it might become the true policy of the United States to take action to maintain the gold dollar as the "unit of value" according to the present statute, and for the Executive to recommend to Congress suitable measures, if any further action is necessary, to maintain permanently the present interchangeable quality or convertibility of our currency into gold coin on demand, whether consisting of notes, silver coin, or silver certificates.

From the beginning of my work, early in the month of June, until the present date, I have called urgent attention to two points which I considered of paramount importance:

(1) That for the reasons given, to wit, the contraction of bank notes through the payment or sale of the bonds which are required as security for their issue, and the withholding of legal-tender notes or coin in the Treasury owing to the rapid accumulation of a surplus, the currency of the United States was steadily tending toward an absolute bullion basis, *i. e.*, tending to consist, for the time at least, mainly if not wholly of paper certificates issued by the Government, sustained in full, dollar for dollar, in specie; which tendency might cause a very heavy and continuous draft on the gold reserves of Europe in the fiscal year from July 1, 1887, to July 1, 1888, if not for a longer period.

(2) That for reasons which will be fully given hereafter, silver had been unduly discredited and depressed in its price as bullion in Europe, while it still retained substantially its full value or purchasing power among the vast populations of other continents, among whom it is and must remain the principal and necessary money metal for use in the form of coins.

I have therefore submitted the case as one in which immediate action would be desirable if any action were contemplated in Europe for the adoption of the bimetallic system; since the restoration of silver to its full function of legal tender might avoid a financial stringency such as might otherwise be brought about by any important draft upon the gold reserves of Europe.

I have ventured to suggest that if the very able and discreet financial authorities of Europe should now conclude that there were great advantages to commercial and manufacturing countries in maintaining the single standard of legal tender upon gold only, and if no present action were taken for a bimetallic treaty of legal tender, it would not be probable that the United States would surrender its great advantage of position on the same basis, *after* having established its monetary system on a full and absolute bullion reserve covering its paper almost dollar for dollar and consisting mainly of gold coin. It might therefore happen that the concurrence of the United States, if considered important, would perhaps be more readily secured now than it could be hereafter, if at some future date the bimetallic system or option of legal tender, in either gold or silver, should become desirable to European states.

I have presented these views as impartially as possible to the representatives of both monetary theories, called "Monometalism," and "Bimetallism," and I have sustained them in detail by considerations which are fully given in Appendix A, to which reference is made.

I submit this full statement of my method of procedure in order that no doubt may be felt in regard to my conclusions as to the present status, upon the ground that my own private convictions might have given a bias to my course.

I have endeavored as far as possible to limit myself to procuring information without making any personal attempt to influence opinion, except to remove what I believe to be the unwarranted discredit of silver and to give to the influences which ought perhaps to operate in advancing the price of silver bullion the prominence which I think is due to them.

Believing most fully that bimetallism exists *de facto*, and that the use of both silver and gold as monetary metals is an absolute necessity, I have endeavored to direct more attention to the laws of commerce, which in the long run must govern their distribution and circulation, lest the discredit of silver and the local depreciation in its gold value should be increased and prolonged by misdirected efforts to restore silver to its former ratio, resting wholly upon statutes of legal tender.

Admitting most fully the evil, both present and prospective, growing out of the change in the ratio of silver to gold in the last few years in the principal financial centers, and especially in London, and in view of the fact that the continued coinage of standard dollars, even at only the present rate, will slowly but surely bring the money of full legal tender in the United States to the standard of silver only, at whatever ratio to gold it may then bear, it has seemed to me suitable to use every means in my power to remove the discredit of silver and to call attention to the powerful forces which are now just beginning to act, but which cannot fail to increase the demand for silver coin over great continents.

I have reason to believe that my efforts in this direction may have partly removed the dread of a prospective "avalanche of silver," as it is sometimes called, from the continent of North America, especially from the United States, and that this fear, which has been perhaps the most potent cause of the unwillingness even to consider the question of bimetallism, may be wholly removed by the further investigation as to the relative production of silver and gold which may ensue. Another dread may also have been removed, to wit, that of a sudden change of policy in the United States leading to the cessation of silver coinage and also to the possible attempt to dispose of a considerable part of the present stock of silver coin. The people of Great Britain are so wholly unaccustomed to the use of any representative paper money of less denomination than the five-pound notes of England or the one-pound notes of Scotland, that I think there has been no real appreciation of the manner in which the silver certificates of the United States have passed into the circulation, or how easily they are now maintained at par in gold, taking the place of bank notes as they are disused and of legal-tender notes as they may be of necessity rather than choice withheld in the Treasury.

While I can not hold out any prospect of any present action for restoring the free coinage or full legal tender of silver, I may perhaps be justified in the discharge of the duty imposed upon me by having removed certain very great misconceptions which have prevented a true consideration being given to the question at issue, and perhaps it may have fallen to one who had not been identified with the advocacy of a bimetallic treaty of legal tender to do what those who rest the value or ratio of silver to gold almost wholly upon statutes or treaties might not have accomplished.

Having thus stated how I have endeavored to perform the duties assigned to me, I now report that in my judgment—

(1) There is no prospect of any change in the present monetary system of European states which can modify or influence the financial policy of the United States at the present time.

(2) There are no indications of any change in the policy of the financial authorities of the several States visited by me which warrant any expectation that the subject of a bimetallic treaty for a common legal tender, coupled with the free coinage of silver, will be seriously considered at the present time by them.

(3) There is no indication that the subject of bimetallism has received any intelligent or serious consideration outside of a small circle in each country named, as a probable or possible remedy for the existing causes of alleged depression in trade.

(4) There is no considerable politically organized body of influential persons in either county with whom a combination could be made, if such a combination or co-operation were desirable on the part of a similar body in the United States, for promoting any definite or practicable measures of legislation to bring about the adoption of the bimetallic theory according to the commonly accepted meaning of that term. The discussion is as yet almost wholly personal, and without concentration of purpose or the presentation of any well devised measure capable of being acted upon.

The exact status of the question is as follows: What is known as the bimetallic theory of coinage and legal tender may be said to be adhered to in principle by France and by the other members of the Latin Union, but the free coinage of silver cannot be resumed without the concurrence of Germany.

Spain, which does not belong to the Latin Union, continued the free coinage of silver until quite a recent period, but has been compelled to cease by the constant drain of gold.

Holland, as I am informed, waits events, under acts which will enable her authorities to maintain the gold standard without further legislation if it should be imperiled. See Appendix B.

There is some apparent difficulty in France, but not much, in maintaining the present large volume of silver coin, which is of full legal tender substantially at par in gold. The volume of this currency is large, but the habits of the people of the Latin Union, especially of France, render a very large volume of actual money in circulation an absolute necessity, much larger per capita as compared with the amount in other great commercial and manufacturing countries. Personal credit is very limited; the use of checks, even for the payment of considerable sums, such as the rent of houses or apartments in Paris, is almost unknown. Daily purchases of the means of subsistence are paid for in money, and great sums are hoarded. The payment of so much of the indemnity required from France by Germany, after the Franco-Prussian war, as was paid in actual coin, is assumed to have been almost wholly derived from the hoards of coin previously held by the people, who then subscribed in such ample measure for the *rentes*. Hence the silver coin keeps in circulation or is hoarded, while the banks and bankers of France are sustained by a very large reserve of gold.

There is a strong minority of able men in France, however, who advocate the maintenance of the single standard of legal tender in gold coin only.

Germany cannot or will not take up the consideration of any change in her present acts without the concurrence of Great Britain. The discussion of the theory of bimetallism is actively continued in an academical manner by the professors of her universities; but in March last, at a convention of delegates, the various chambers of commerce, which are very important representative bodies, declared against any change in existing acts by a vote of 71 chambers to 4. *Vide* report of her Britannic Majesty's Consul Strachey, of Dresden, to the Government of Great Britain, a copy of which is submitted herewith.

Great Britain awaits the report or reports of the Royal Commission on Gold and Silver, which has adjourned until the autumn or winter, after the examination of sundry witnesses whose testimony has been published, a copy of which is submitted herewith.

The possibility of a bimetallic treaty without the concurrence of Great Britain has been suggested, but it has apparently no prospect even of consideration in Germany, and very little elsewhere. At every point, and by the representatives of every phase of opinion on the continent, I was assured that the continuance of the present status or the future adoption of a bimetallic system of legal tender virtually rested upon the action of Great Britain. I beg to say, however, that these opinions are not based upon any official statement made to me by any officer of any Government. It therefore becomes most important to give the exact status of the question in England, and to this matter I have given very close attention.

The advocates of the optional or alternate legal tender of gold or silver at an agreed ratio, commonly called bimetallists, are zealous, sincere, active, and aggressive. The advocates of the single legal tender of gold coin, commonly called monometallists, are at present rather passive and inert than active in opposition, relying more upon the innate conservatism of the English people than upon positive defense of their theory and practice at the present time.

The bimetallists have brought to their support the East Indian civil and military officers who maintain their families in England, and who are obliged to remit depreciated rupee paper to London; also a portion only of the manufacturers and merchants, especially of Lancashire, who have been exposed to more or less difficulty and expense in realizing the proceeds of their goods, which are exported to the East. Outside of these two classes, who have, or are assumed to have, a direct personal interest in the matter, the great body of the English people are apparently indifferent or else are ignorant of the subject. Bimetallism has not yet become a live question of any great parliamentary or political importance.

Some of the most zealous bimetallists earnestly believe that the present great depression in English agriculture is due mainly to the low price of wheat, and that the price of wheat is established by the competition of India; furthermore that the depreciation of the silver rupee in London works a corresponding bounty upon the export of East India produce, it being alleged and apparently proved that in the domestic traffic of India the rupee retains its former purchasing power, or very nearly so.

It is held by many persons who do not accept this reasoning that if the advocates of the bimetallic system should create a popular impression that the present depression in the price of agricultural products could be imputed to this cause, then the issue might at once assume a parliamentary and political importance which it has not yet attained. This might again be hastened if the prospective draft of the United States should make such an apparent scarcity of gold, even for a limited period, as to sustain the view that it is gold which has appreciated, and not silver which has depreciated.

If, on the other hand, the deficient crop of Indian corn in the United States in the present year, or any other cause, should change the conditions and tend to put off this strain upon the gold reserves of Europe by diminishing our exports while our imports are increasing, it is held that the consideration of the silver question would remain substantially as it now is, awaiting the report of the Royal Commission, after which the beginning of a thorough discussion may be reached, in which both sides will be represented.

I submit these various views, which have been derived from many sources, giving my own judgment that no change will occur in the position of Great Britain and therefore of Europe for a long time to come; certainly not in season to affect the present or even the prospective policy of the United States. In such event it may be necessary for the United States to frame any changes in its own monetary system, if any are now advisable, in such a way as may best promote its own interest, irrespective of any prospective change in the policy of any other country. In short, monetary legislation has not yet become a department of international treaty or law.

Having reached this conclusion while treating the subject wholly on the monetary side, and irrespective of the special interest of the United States both as a producer of silver bullion and the owner of a very large quantity of silver coin, it seemed to me to be wholly within the scope of my duty to consider the grounds on which silver has been so much discredited, and to present in as public a way as possible the reasons why an increased demand for silver relative to probable supply may presently restore the price of silver more nearly, if not absolutely, to the price which it bore for many years prior to 1873, to wit, about 60 pence per ounce, or to a ratio of about 15½ to 1 of gold.

I found that so far as any public discussion is concerned on the part of the principal advocates of "bimetallism" little attention had been given to the relative supply of or demand for either gold or silver. This is due to the fact that they hold that the value of both is due much more, if not wholly, to statutes of legal tender than to relative production and necessary use; in some cases only they allege rather than prove a scarcity of gold.

On the other hand I found, as I have before stated, among the advocates of "monometallism" a continued and somewhat indefinite dread of an "avalanche of silver" from the North American continent with little, if any, regard to cost of production, and at any price which might be obtained. I had once been myself subject to a similar misapprehension of the probable supply of silver, but had long since laid aside this impression and I was not prepared to find it existing here in such full force.

As it had been the opinion expressed by myself to you some months since that the price of silver might slowly but surely recover in consequence of the increasing demand of the vast population to whom silver is the necessary money metal, which led to my appointment on my present mission, I have taken every opportunity to present this view to the gentlemen with whom I have had conferences and to test it by discussion.

It has been received by nearly every one to whom it has been suggested as a matter of the utmost importance and one which had as yet received little or no consideration. The hope has been expressed that the testimony of experts on the present and prospective product of silver bullion in other countries, especially in the United States, might be taken at the earliest possible day, so that it may soon appear whether or not the reduction in the price of bullion has caused any important cessation in silver mining, and also to what extent productive silver mines have been exhausted.

In order that this matter might be most fully and promptly considered I ventured to accept an invitation to make an address on the necessary existence of bimetallism and the necessary use of both gold and silver as money metals before Section F (Political Economy and Statistics) of the British Association for the Advancement of Science, a copy of which address is hereto appended as a part of this report (Appendix A).

The meeting of the Association also gave me the opportunity to meet many gentlemen of great influence who had taken part in the discussion of this question, and whom I could not have met in any other way without devoting a great deal more time than had been assigned to me in your letter of appointment.

At this point I might perhaps conclude my report and rest its submission, with the accompanying documents; but there has been a growing impression in my mind, which has become almost a certainty, that there are some further conclusions to be drawn from my experience in this mission, to which the attention of the Government should be called.

The most important point which I beg leave to present is this: I am convinced by my own observation, sustained by the judgment of others, citizens or officials of the United States, whom I have consulted, that it would be unwise and inexpedient for the United States again to take the initiative in promoting action for a general adoption of a bimetallic legal tender, coupled with the free coinage of silver, for the reason that such action is misconstrued and may tend to retard rather than to promote the object aimed at. It may also increase rather than diminish the discredit of silver.

The reason is this: The general conviction among the financial men in Europe is that the United States Government is loaded with an excessive quantity of silver dollars which it cannot get into circulation. These dollars are coined at a standard which is at variance with the silver money of any other country, to wit, at the ratio of 16 of silver to 1 of gold. It is believed that the financial officers of the United States are convinced that the product of silver is excessive, and that the ratio of silver to gold, *i. e.*, its price as bullion, is liable to fall even lower than it is now; therefore any initiative by the United States is looked upon as an attempt to relieve itself of an unprofitable stock and to provide a market for the future product of silver. Any effort of the United States to promote a bimetallic treaty and to restore the free coinage of silver is not therefore regarded as a sincere effort to promote a better monetary system of which all nations may share the benefit, but rather as being induced by a desire to promote the special interest of the United States at the cost of whom it may concern.

It is utterly impossible for the thoroughly trained and intelligent statesmen of Europe, either bimetallists or monometallists, to comprehend why the United States should continue to coin dollars of the present standard of the ratio of fifteen and ninety-eight one-hundredths (15.98), say sixteen (16) parts of silver to one of gold, which cannot be adjusted by any treaty to the present standard of any silver coin in circulation in other countries without the recoinage of European and East Indian coins. Therefore, when the subject of a common legal tender is suggested, the question comes up about in this way: If the United States really mean what they propose, the coinage of Bland dollars must of necessity be stopped and the coin be withdrawn. For, if free coinage were re-established in Europe, and a treaty of common legal tender were made at the ratio of fifteen and one-half (15½) to to one, and if Bland dollars were still outstanding, all these Bland dollars would immediately be shipped to Europe and India, and the United States would be relieved of the burden. On the other hand, the United States could not agree to coin at any higher ratio than, say, fifteen and one-half (15½) to one, without a recoinage on their own part of the dollars now existing at the ratio of sixteen (16) to one. A treaty is impossible except the same ratio be adopted by all the parties thereto.

It will be remembered that long anterior to 1873 a considerable amount of standard silver dollars, of the same weight and fineness as those which are now coined, were issued from the mint of the United States; but as the price of silver in London was then a fraction over sixty (60) pence per ounce, these dollars were worth in gold a fraction over one hundred and three (103) cents per dollar. They were all therefore exported to be recoined in Europe at the ratio of fifteen and one-half (15½) to one, or else were melted into plate. It is apparent that if an international treaty for a common legal tender of silver coin were adopted, and the standard coin of Europe were maintained at fifteen and one-half (15½) to one, the present standard dollar of the United States would take the same course as before. It is evident that if the grains of gold which are contained in one gold dollar could be exchanged for silver coin at the ratio of sixteen (16) parts of silver for each unit of gold, while this silver could be converted into legal-tender coin at the ratio of fifteen and one half (15½) parts of silver to one of gold in Europe, there would be a constant profit in the exchange of European gold for American silver. On the other hand, if the European States were to adopt a ratio, say, of eighteen or nineteen (18 or 19) parts of silver to one of gold, which plan is now suggested by some of the East Indian bimetallists, then a corresponding exchange of the gold of the United States for the silver of Europe would begin, and such silver would thereafter be converted into coin in this country at the present ratio of sixteen (16) to one, it being assumed that we had then agreed by treaty to free coinage without altering our standard.

It therefore follows that so long as the present coinage of the silver dollar of the United States is continued, no proposition for a bimetallic treaty for the full legal tender of silver coin can be entertained by European states, since they will not consider, under any circumstances, a proposition for the recoinage of their own silver in order to adjust it to the standard of the United States.

If European nations enter into a bimetallic treaty it might be with the expectation that the opening of all mints to free coinage either of gold or silver in Europe, on a standard of fifteen and one half (15½) to one, would bring the price of silver bullion back to a fraction over sixty (60) pence per ounce. If it did not do so, then it would not have the effect which the advocates of the bimetallic theory expect, and the whole purpose of the treaty would fail.

In fact, the United States by maintaining the present standard dollar, virtually declare to the public that it requires sixteen (16) ounces of silver to be equal to one ounce of gold. The United States, therefore, to that extent discredit and depreciate silver bullion below the standard formerly in force among European nations, who coined only fifteen and one-half (15½) ounces of silver as the equivalent of one ounce of gold. The present acts of coinage in the United States therefore depreciate silver as compared to the European and East Indian standard.

Men differ as to what the effect of stopping the monthly purchase of bullion would be upon the price of silver bullion. Some of the most ardent bimetallists hope this purchase will be stopped, because they think it would promote a further fall in the price of bullion, create greater confusion in the exchanges, especially with India, and thus force action on the part of Great Britain.

Others pay no regard to probable effect, but simply hold that so long as the coinage of dollars at the ratio of 16 parts of silver to 1 of gold continues, while the ratio in substantially all other countries is 15½ to 1, so long will any proposal for a bimetallic treaty on the part of the United States be utterly barred from consideration, if not open to suspicion.

Others hold, with whom I myself fully concur, that in view of the increasing demand for silver, the fall in the price of bullion, if any were caused by the cessation of purchases by the United States, would be very slight and of very short duration.

I beg leave to submit with this report—

(1) A copy of the testimony given before the Royal Commission on Gold and Silver.

(2) A copy of a report on the present state of the question of bimetallism in Germany, by Her Britannic Majesty's consul, G. Strachey, of Dresden.

(3) A copy of the last edition of the "Materialen," by Dr. Adolph Soetbeer, whose figures are customarily accepted as of the highest authority, the only exception taken to the accuracy of this compilation being in respect to the large estimate which Dr. Soetbeer gives of the consumption of gold in the arts. I earnestly recommend the translation and publication of this document.

(4) A note on the monetary system of the Netherlands, by Prof. H. B. Greven, which I also recommend for publication.

(5) My own address before Section F of the British Association for the Advancement of Science.

Very respectfully, your obedient servant,

EDWARD ATKINSON.

APPENDIX A.

WHAT IS BIMETALLISM?

[Read before Section F of the British Association for the Advancement of Science, by Edward Atkinson, September 7, 1887.]

This question may perhaps be considered rather a singular one to be asked at the present time, when a royal commission is engaged upon the examination of the subject, at the urgent instance of the advocates of the theory, and with a view to its possible adoption in Great Britain and elsewhere.

Yet it has been my experience, while myself engaged upon a similar examination, that about nine men out of ten, even of those who might be expected to have some definite views upon the subject, when asked their opinion upon the expediency or necessity of adopting a bimetallic monetary system, will reply, "Oh, that is a very important question, but I do not pretend to understand it."

Yet more strange does this become when men of great intelligence, who hold or who have held high financial position, attribute the fall in prices and the depression in trade, which is said to have existed for several years, to the alleged "demonetization" of silver since 1873.

A few persons only will answer on the one side, "that they cannot see how two substances of unequal cost can be made of equal value by legislation." A few others will say, "If money derives its value from acts of legislation, why use such costly materials as either silver or gold; why not use copper or paper altogether?"

On the other side, a good deal of feeling is expressed against those who are said to have "boycotted silver"; whilst those who cannot wholly give up the idea that the cost of production is an element in determining the value even of the precious metals are apt to be considered rather obtuse in their reasoning power.

The very earnest manner in which the views of ardent bimetallists are presented, and the very sincerity of their own convictions, has led a large number of persons to think that some very grave wrong must have been committed somewhere, which should be speedily remedied by law-makers. Even the poor English farmer who can no longer raise wheat at a profit on leased land, and who cannot make free use of the land for other crops under the present conditions of his lease, is assured that it has not been the extension of the railway system in America and of India and the construction of the Suez Canal that have brought cheap bread to the multitude, but that wheat has fallen in Mark lane from 50 to 34 shillings a quarter, or less, because a silver rupee which used to be worth 23 pence gold in Lombard street will now bring less than 19.

Yet, in the face of this admitted uncertainty, it is expected that public opinion shall be brought to bear upon this subject, and that legislators shall perhaps be compelled by the very force of public opinion to change all the acts relating to coinage, legal tender, and other acts pertaining to money, lest greater disasters should occur than those which have already been imputed to the acts of the several countries by which silver is said to have been "demonetized."

In my own country the case is aggravated by the fact that we possess a considerable number of important deposits of silver ore, from which we annually produce a quantity of bullion, which may bear a ratio to our total annual product of a little less than ½ of 1 per cent.; which product has cost us (in the opinion of most competent observers), if regard be given to the time and labor which have been devoted to unprofitable mines and to the waste in fraudulent enterprises, at least $2 in gold value for every $1 of silver bullion produced.*

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* Reference is made to the small relative importance of silver bullion in the United States—considered as a national product—not for the purpose of underrating it, but because a false impression prevails in Europe that it has become a branch of industry of great importance, and that we can increase the supply of silver bullion to an indefinite amount, whenever we can find a market for it, at the present or at a very much lower price.

Does not this, in part uncertain and in part intolerant, condition of the public mind lead one to infer that the bimetallic theory has been treated as yet, only or mainly, in an academic way, without much regard to fact; or else in terms which are not common modes of thought or of speech among every-day people? Is not this one of the reasons why many other problems which come in the domain of political economy have been little comprehended by those whose affairs are most directly connected with or affected by them?

If this is so, the remedy may be found in translating the language of the schools and the terminology of the professed bimetallists into the common speech of the counting-room and of the exchange.

To the mind of the practical business man, whose study of political economy has been primarily based on the observation of events, guided by the principles which have been laid down by Adam Smith and a few great masters—with the use of other books and current treatises merely as secondary aids to reflection—it seems a very mistaken way to discuss bimetallism as a theory, when bimetallism exists *de facto* in almost every country which has any coin of any kind in circulation, and when it can be observed in all its bearings.

It also seems to be rather a waste of time to discuss either the alleged or prospective demonetization of silver by England, Germany, or any other nation, when silver has not been and can not be demonetized or deprived of its function as a money metal any where; or when the very conception of doing away with silver money is almost unthinkable, so universal is its use. Is not the silver coin which is in your pocket and in mine at this moment money—according to any meaning or definition of that word which has yet been given to it? In the vast majority, in point of number, of every day's bargains or sales, does not silver money do a part or the whole of the work?

It is only when one attempts to pay a debt previously incurred, say of one hundred pounds, by offering two thousand silver shillings, that he may find that silver coin fails in one out of the many functions of money; and he may then become aware for the first time of the grounds on which the bimetallic theory now rests. He may then be informed for the first time that the only money which is entitled to the name is that which has been declared by statute to be a legal tender for deferred payments. May I venture to suggest that the very conception of what is meant by legal tender is something out of the common course of thought. I suppose that not one man in a thousand would know how to make a legal tender without he first took the advice of counsel.

The very origin of legal tender is obscure, if not unknown. I have asked many learned lawyers to tell me when and where an act of legal tender was first applied, or by whom, and not one has been able to answer.

It is known, however, that money, in the form of coins made of gold and silver, was in use or circulation before acts of legal tender came into force. Nearly all, if not all the original names of such coins show that they were derived from the weight of metal in them, and were intended to indicate it. It may, therefore, perhaps be inferred that the first act of legal tender was conceived in fraud by a despotic government, in order to force a creditor to take less valuable coin than his contract called for. It is well known that some of the basest acts of tyranny have been the forced circulation of debased coin.

It may not, however, be denied that, whether born in fraud and nursed in corruption or not, the function of being legal tender has become a useful if not a necessary function of money; but to attribute the whole power, use, and circulation of money to this single incident in its use seems to me a grave abuse of reasoning, and to weaken rather than to strengthen the argument for a bimetallic system.

It is held, however, by most conspicuous and able advocates of bimetallism, if not by all, that acts of legal tender are necessary even to the circulation of coined money, of whatever metal it may be made, and that the ratio of either gold or silver to each other or to merchandise, services, or land might be very different to what it actually is, if the law did not force creditors to receive coins of given weight and fineness in payment of debts due to them.

It is also held by bimetallists that if a given ratio between gold and silver shall have been established, say 15½ parts of silver to 1 of gold, or any other, and that by agreement among commercial nations either kind of coin shall be a legal tender for debts, then they will become everywhere convertible or interchangeable at that ratio.

It is held that there can be no variation in the rate of exchange between one country and another growing out of the use of one or the other metals as the principal metal, but that, if free coinage is granted to both at the agreed ratio, the only variation in exchange which could be imputed to the quality or kind of metal would represent only the difference in the cost of transportation.

One proposition of that most conspicuous and able bimetallist, Henri Cernuschi, may be most heartily accepted, if all else are rejected (I quote from memory): "That only is good money which will stand the test of fire, and which is worth as much as bullion when melted as it had been worth in the coin itself."

It is further held that if such a bimetallic treaty of legal tender were made, thereafter the two metals would be as one mass, and that their value or ratio to merchandise or services would be subsequently governed by the joint product or supply of both metals, without being affected by the specific or varying quantity of each which might be produced in any one year.

Finally, it is held that any subsequent change in the ratio of gold and silver to merchandise and services would be almost inappreciable in any customary period of commercial credits, or in any ordinary period of mortgage debts, railroad bonds, or other commercial obligations; for the reason that the joint product of both metals in any one year bears so small a proportion to the total mass of gold and silver in existence, or in circulation as coined money.

In support of these views the advocates of bimetallism, or, as it might be more properly called, of an alternate or optional choice of legal tender, are apt to say that when silver coin has been deprived of the full power or force of legal tender it has been "*demonetized*."

If their proposition can be sustained that coined money only obtains its title to be called money and only circulates as money by the force or power imparted to it by legislation, then they may be right. If it is true that unless coin is a full legal tender it is not money, it may be suitable to affirm that coin can be demonetized by the repeal or limitation of its legal tender quality; otherwise the use of the word *demonetized* is misleading, and this, it seems to me, is the principal cause of the confusion which now prevails.

The writer found great difficulty in considering these propositions until he took the ground that neither the terms bimetallism nor monometallism, as commonly used, had been rightly applied to the existing monetary condition of nations, and that the word demonetized had been wholly misapplied.

It must, I think, be admitted that gold and silver had become the customary materials of money—had been endowed with all the functions of money—and had been minted, shaped, stamped, or coined into specific pieces of money of given weight before the conception of an act of legal tender could have arisen. It must also be admitted that both ordinary coin or pieces of silver in other forms, as in China, now circulate as money among nations and races in which there is even now no act of legislation in respect to legal tender.

It must also be admitted that there is now no general act of legal tender which is or can be applied to international commerce, yet international commerce is conducted in terms of money, by the measure of price, and the balances of trade are settled by the passing over of coined money or its equivalent in bullion.

Lastly, it must be admitted that silver coin still performs the function of money in Great Britain and Germany, as well as in France, the United States, or in Asia, Africa, and South America.

In fact, if we compute transactions, bargains, sales by number rather than by amount, silver is even now the principal money metal of the world, circulating as money more freely, fully, and widely than gold.

Putting aside, then, the conception that either gold or silver can be demonetized by statute law, and reasoning upon the ground that bimetalism exists *de facto* in every continent and in every country, may we not bring the question of an international treaty for a common legal tender into a very simple form?

The question may be stated as follows:

(1) Is it expedient for manufacturing and commercial nations to enter into an agreement that all mints shall be open to the free coinage of both gold and silver?

(2) That coins made either of gold or silver at an agreed ratio of weight and fineness shall be a common or universal legal tender according to the weight of metal in them?

(3) Would such an agreement of legal tender reduce the variations in the rate of exchange between one country and another to the cost of moving coin or bullion, plus the cost, if any, of converting the coin of one country into that of another by reminting?

(4) What would be the effect of such a treaty upon the future production of gold or silver, and what would be its effect upon outstanding obligations for the payment of money at a future date?

It is quite possible that many persons may be more capable of reasoning upon two subjects, by combining them, than the writer is; but it seems to him that monetary acts relating to coinage, the unit of value, and the like, belong to a very distant and separate department of law from acts of legal tender which relate only to the enforcement of contracts and the liquidation of deferred payments.

It is admitted, however, that the working of one class of acts may be greatly affected by the other, and that good money which will stand the test of fire may be driven out of circulation by depreciated coin or paper substitutes, when the latter are forced into circulation by an act of legal tender. Good money needs no force of law to assure its acceptance. It is only bad money that requires force.

One can often clear the mind of doubt or uncertainty by inventing hypothetical conditions.

Let us suppose that in place of two metals, one yellow and one white, there had been but one blue metal, equally attractive to the eye, equally fit for ornament, free from oxidation, ductile, and otherwise endowed with the same qualities, and yielded by nature in volume or quantity corresponding to the yield of gold and silver combined. Would not the money of the world have been coined from this blue metal? What place would there then have been for any battle of the standards, or for any act of legal tender, unless the weight or quality of the coin had been debased?

Is not the whole subject, therefore, narrowed down to a single issue: Can two kinds of coin, made of two separate metals, produced under different conditions and at varying cost, if cost be measured in terms of labor, be made one by statute for the purpose of discharging debts, the payment of which has been deferred, and will this statute use of coin for one of the functions of money lead to the customary use of such coin without distinction in all the other transactions in which money is passed from one person to another?

At present the world may be divided into three sections in respect to statutes of legal tender or of customs possessing the force of such acts. Prior to 1873 the single legal tender of gold was so limited, and the free coinage and full tender of gold was so nearly universal, that the ratio of 15½ of silver to 1 of gold had become almost everywhere established. The whole product of silver could then be converted into coin, and the price of bullion at about 60 pence per ounce in London had become merely an expression of that ratio. Whether this was a consequence of the free coinage or not need not be discussed, the price of silver varied but little, and the small variations were due to special causes.

In 1873 Germany called in its miscellaneous coinage, after a discussion which had continued for ten years, issued new coins of gold and silver, making gold the principal and silver the limited legal tender, and then put upon the market as bullion only that portion of the silver which must previously have been chiefly in the reserves of banks and bankers, or have been hoarded.

Germany drew gold from the ample stock of the world—there was enough and to spare, and no great stringency occurred—no sign of scarcity of gold appeared.

This mass of silver offered for sale by Germany came upon the market at a time when the annual product of silver was increasing, and it caused "a scare" very much like that which occurred when the much greater relative increase in the supply of gold caused a similar "scare" about gold. This sum, although small in ratio to the mass of silver in use, was yet a large sum to be disposed of within a limited period. Presently the members of the Latin Union felt compelled to cease the free coinage of silver; this aggravated the scare, and silver became distrusted and discredited.

But is it not an utter abuse of language to say that silver was "demonetized" either by Germany or the Latin Union by these acts? Is not silver money still in circulation in Germany, in Great Britain, in France, and are not the greater number of daily transactions liquidated, paid, or settled by passing silver money from hand to hand.

Nevertheless the action of Germany and France did cause silver bullion to depreciate in price in the financial centers and as a measure of international commerce. The States of Europe and the United States could not at once increase their consumption and import of the products of Asia, Africa, and South America, where the demand for silver remained constant and the pressure of the stock of silver bullion caused a reduction in its price at the commercial centers. To what extent such a change or depreciation has extended into the interior of the silver-using continents does not fully appear. The testimony is very conflicting, and it is very possible that the bullion price of silver will recover in the financial centers before the purchasing power of silver will have been greatly altered among the thousand million people to whom it is now, and must long remain, the principal money metal.

It may happen that the moderate rise and the hardening market for silver bullion already apparent are mere precursors of a yet greater rise, now that the stock of bullion held by Germany has been disposed of, and now that the increasing commerce of Asia, Africa, and South America is opening a greater demand for silver coin to meet its requirements.

Witness the recent purchase of silver bullion from Germany even by poor Egypt, in order to enable her coinage to be established. Witness the recent contract in Belgium for coinage for the Congo region. Witness the annual flow of millions of rupees from India into or through Burmah, whence they never return. Witness the movement of silver from France to Tonquin and the demands of Japan. These may be mere straws, but they may also be the beginnings of a change which may be guessed at, but can not be computed.

The world may be divided into two sections by population. The population of Europe, the United States, and Canada number about 400,000,000, but Russia must be set aside as in an intermediate stage. This leaves in round figures about 300,000,000 who may be designated as the machine-using nations, commonly called manufacturing, but who might be more fitly entitled the *mechanifacturing* people. Their several States are covered by a network of railroads; their banks and banking methods have been well developed; their law of contracts is well established; their margin of profit is very small, and their standard of full legal tender is now gold, the limited coinage of silver being maintained at par in gold.

Russia stands in an intermediate stage in the struggle to emerge from semi-barbarism; she has yet attained few of the advantages of what is called civilization, but has adopted some of the worst of its abuses, notably paper money. Her gold and silver product is, therefore, either hoarded or exported, and Russia may not therefore be counted an important factor in the present discussion, but may become one if she should realize the necessity of establishing specie payment, of which there are indications that her statesmen appreciate the importance.

In Asia, Africa, South and Central America, Mexico, and Polynesia we find a computed number of about 1,000,000,000 people to whom the modern factory system and the use of machinery or machine tools are almost wholly unknown, and among whom the construction of railways is just beginning to effect a revolution, the scope of which the imagination fails to grasp. Their commerce with the machine-using nations consists mainly in the exchange of crude materials or articles of food which require tropical or semi-tropical conditions, for the finished products of the factory or the workshop. One needs only to name tea, coffee, sugar, hemp, wool, spices, many kinds of ore and timber, indigo, dye-woods, and the like, in order to comprehend the nature of the traffic and the kind of manual labor which must be done in the production of these materials; it may be more or less skilled, but yet always manual labor aided by the crudest machines, in which kind of work low cost and low wages are synonymous terms. In this latter respect differing from the application of modern machinery, in the use of which low cost is compassed by the payment of high wages, both in rate and in purchasing power. The people of these continents know little of banking methods; credit is greatly restricted, but the volume of their transactions is vast. Their principal money metal—their standard of value—is silver.

Silver coin circulates by force of custom rather than by virtue of acts of legal tender, of which they would have little or no comprehension, and the great mass of silver now in existence is held by the people of these continents or countries.

Now, it happens, in consequence of the duties which are imposed by the United States, by Canada, and by most European countries, upon all or the greater portion of these crude materials or articles of food which constitute the exports of the non-manufacturing and silver-standard countries that the chief market for their products is in England. It is in London that their accounts are settled. London has become the banking center, because it is the trade center of the world, and, therefore, it is also the point to which silver bullion tends, in order that it may be exchanged for the products named. But it further happens that in London silver bullion is met by the competition of India Council bills, drawn in silver rupees, and forced upon the market in liquidation of the obligations of India, at stated periods, and at whatever price in gold the rupee will bring.

How much have the regular and forced sales of these India Council rupee bills tended to depress silver bullion in the London market?

I have been unable to come to any conclusion as to how much weight should be given to this notable fact, that the heavy loans negotiated in England on behalf of India began to affect the silver market in 1873, and subsequently down to the present time the sale of India Council bills has been about double what it was in an equal term of years prior to 1873; at one time almost stopping the flow of silver into India, and through India into Asia.

It is very well understood by business men that even when there may be no general excess of an article there may be a temporary excess at a given point.

Here we had in 1873, and for a few years after, an increasing flow of silver from the mines, and a considerable stream from the banks and hoards of Germany, all working into one spout in London, where it has been met at the little end by an obstruction of rupee bills forced on sale at stated periods. What else could have occurred except a local fall in price? The volume of imports from the silver-using countries could not increase at once, and, therefore, more silver was exchanged for what were needed.

It therefore seems to me that the "silver question," so called, cannot be determined until less attention is given to the bullion price in London and more attention is given to the present and prospective use of silver coin in other countries. Coupled with this the present and prospective supply of silver in ratio to gold must be taken into account; and, lastly, the effect, if any, of the cessation of the coinage of silver in Europe must be considered, and the establishment of the gold standard in Europe and the United States, upon the earnings and condition of the working people, who constitute the great mass of the population of all countries.

As soon as we enter upon this inquiry we are met by the fact that there has been no actual increase in the production of silver bullion since 1850, in ratio to the mass then assumed to have been in existence, in any measure corresponding to the increase of gold in ratio to the mass of gold previously produced.

According to the figures of the United States Mint, in which the world's product of silver is rated in standard dollars, the product of gold from—

1849 to 1884, inclusive, was	$3,882,975,000
That of silver for the same period	2,250,375,000

But it is much more conclusive to make the comparison by weight, and for that purpose reference may be made to the graphical tables which accompany the last edition of Dr. Soetbeer's "Materialen."

His estimate of the production of gold is—

	Kilograms.
1493 to 1850, inclusive	4,752,000
1851 to 1885, inclusive	6,383,000

A proportion in the latter period over the former of a fraction over 134 per cent.

His estimate of the production of silver is—

	Kilograms.
1493 to 1850, inclusive	149,826,000
1851 to 1885, inclusive	57,564,000

A proportion in the latter over the former period of only 38½ per cent.

Admitting all the elements of uncertainty in respect to estimates of this kind, yet the facts which are known will justify these proportions as a basis of reasoning. It may also be remembered that the statistics of *production* are commonly accepted as being very near the mark.

The actual sales of silver bullion by Germany in six years, after 1873 to 1879, when her public sales ceased, amounted to 7,104,896,973 grams, or about 1½ per cent. on the product since 1850.

May we not infer that this sale, coupled with the increase in India bills and the increase of bullion produced, has had a local effect only on the London market, and that these influences may also be temporary?

Reference has been made to the fact that the greater part of the existing mass of silver is now in the silver-standard States and continents. If we assume this to be 80 per cent. of the production since 1493, less waste, we then find that even the entire annual product of silver bears a very small proportion to the whole mass.

Does it not then appear that, when we deduct the silver necessary for subsidiary coinage in the gold-standard countries and the great increase in the demand for silver plate, what remains could not have caused a general depreciation of silver such as appears to be warranted by the fall in the price of silver bullion in London from 60 pence to the present price of 44¼ pence.

I am aware that this method of reasoning will be as incomprehensible to such of the advocates of bimetallism as impute the value even of coined money to statutes by which the coins are made legal tender, as their process of deriving value from statutes without reference to the ordinary considerations of supply, demand, and cost of production is incomprehensible to myself.

I think it is, therefore, not only courteous and justifiable, but absolutely necessary to try their processes of reasoning by the consideration which they give to facts which may be known.

In nearly all the treatises which I have read, the fall in the prices of the great staples of commerce and in all the necessaries of life since 1873 is assumed to have been an evil. Disastrous results are imputed to it, and it again is imputed to the alleged "demonetization," or "outlawry," of silver. By some, but not all, of the writers of these treatises a scarcity of gold since 1873 is also assumed.

In one of the most recent and also historically valuable of these works, The Silver Pound, by Mr. S. Dana Horton, we are told that since 1873 the world has been subjected to certain influences of a malignant character by which prices have been forced down, trade has been depressed, land has been thrown out of cultivation, and various other evils have been incurred.

The writer says that "when prices are falling there is relatively less *movement*, less *production*, less *consumption*, less *success in business;* there is embarrassment and idleness; there is a prolonged crisis, or what we familiarly call hard times."

He then asks, "What is the cause of this fall in prices since 1872?" and he replies: "Evidently the anti-silver laws of the Western nations are the *primary*, the *efficient*, and the *removable* cause."

We are not only told that we have "demonetized," but that we have "outlawed," silver.

If this diagnosis is wholly incorrect, it would not be good practice to adopt a heroic remedy for a non-existent disease. What are the facts?

We may take the experience of the United States, as perhaps the best example; because since 1865 the country has not been disturbed by active war, or by the yet more onerous conditions of the passive war under which most European states are now struggling.

The general fall in prices in the United States began earlier, has been much greater, and has continued longer than anywhere else, because we have been subjected to the admitted appreciation of our paper currency from a depreciation of more than 50 per cent. to par in gold, as well as to the alleged appreciation of gold itself.

Has there been "less *movement*, less *production*, less *consumption?*"

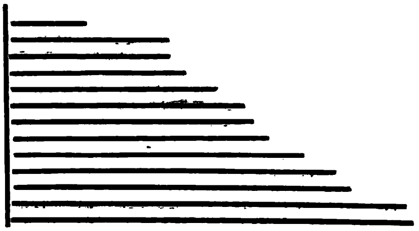
So far from this diagnosis being a true one it may be safely alleged that never in history has there been such a record of increase in the production or consumption of all the necessaries of life, or such active and increased movement in all commodities.

I will not take 1865 as a starting-point, but rather 1870, when we had surmounted the greatest dangers of paper inflation, and were fairly headed towards the resumption of specie payment, which was accomplished in 1879.

Between 1870 and 1885 or 1886, the relative increase in population, in production, in consumption, and in some forms of wealth, has been as follows:

Gain in population, production, wealth, and savings, 1870 *to* 1885, *and on some items to* 1886.

To		
1885	Population	48
1885	Production of grain	85
1885	Consumption of cotton	86
1885	Consumption of wool	88
1885	Production of hay	100
1885	Deposits in savings banks of Massachusetts	102
1885	Production of cotton	108
1886	Deposits in savings banks of Massachusetts	115
1885	Production of iron	143
1885	Insurance of property against loss by fire	160
1885	Miles of railroad	168
1886	Miles of railroad	192
1886	Production of iron	200



In considering these relative gains, it will be observed that they represent a constant gain in the means of subsistence over population; that with the exception of the increase in personal wealth, which is indicated by the increase in the amount of property insured against loss by fire, they represent the progress of the million in the means of common welfare rather than of the millionaire in personal wealth, and that they give testimony to the beneficent law of progress *from* poverty.

The same rule has held true, not only in respect to the necessaries of life, but also as to its comforts and luxuries, and while fully admitting that we have grave problems of "progress *and* poverty" to deal with, yet the rule has been "progress *from* poverty." The mass of the people who constitute the "working classes," in the limited sense in which the so-called "labor reformers" choose to separate them from those who are not wage-earners, have been securing to their own use and enjoyment a constantly increasing share or proportion of a steadily increasing product.

As it has been with production and consumption, so has it been with movement, the third factor cited.

Never in the history of the world has there been such an increase in the actual movement, such activity, such shortening of the time, or such reduction in the cost, as that which has been accomplished by the consolidation of the railway systems of the United States, which was begun by Vanderbilt in 1869, and by the extension of the service since that date. It has also been on the most successful, prosperous, and profitable lines that the increase of movement or traffic and the reduction in the charges have been greatest.

We were enabled to resume specie payment by the possibility of exchanging our surplus of grain and meat for the specie which we needed, by the reduction in the railway charge for moving these products, and by that only. This reduction has occurred, not by conveying wheat at less than cost, but by economy in the work. It is permanent and not temporary, because it pays a profit.

Bear in mind that as yet not much over 300,000 square miles of our domain, out of 3,000,000, is now under the plow, and that up to this time our chief source of supply of grain, beef, and pork, is more than 1,000 miles from the seaboard—bear in mind also that since 1865 we have constructed over 100,000 miles of railway, by which, taking a strip of land only 5 miles wide on each side, 1,000,000 square miles, 640,000,000 acres have been brought within 5 miles or less of a railway—you will then have some conception of what I myself believe to have been the great price-making factor in this generation, to wit, the railway and the steamship.

If such results as I have pictured in the United States have ensued from what has been miscalled the "outlawry of silver," and if these results are wholly due to the adherence to the gold standard of legal tender, the act of outlawry might well be justified. In such case it might surely be judicious to maintain the edict. But it would be as unsuitable to impute the actual progress which we have made to changes of policy in respect to silver as it is to impute poverty and distress thereto.

Wages are now as high in gold in the United States as they were in the period of paper-money inflation, and their purchasing power has increased from 66 to 108 per cent., according to the kind and quality of the work done. Common laborers can buy 66 per cent. more of the necessaries of life with the earnings of one day's work than in 1865; factory operatives of all kinds, men and women, can buy 78 per cent. more; good mechanics can buy 90 per cent. more; and men of special skill and aptitude, over 100 per cent. more.

This vast progress in the condition of the people of the United States has been accomplished during the period when the money of the nation has been appreciating, or since it attained the stability of the gold standard, and while prices have been steadily falling.

There have been short periods when the work of a considerable number, especially of common laborers, has not been continuous. These periods have corresponded closely with the construction of new railroads. In 1882 we built 11,500 miles, in 1884 less than 4,000. The difference corresponds to one year's work of nearly 500,000 men. This year we shall probably construct 12,000 miles, and all the men who were idle can now find work.

Who can wonder that in a term of less than twenty years—in which distance has been lost in a fraction of a cent a ton a mile, in which time has almost ceased to be a factor in computing cost, and in which the whole world has been converted into a close neighborhood, in which each man could serve his neighbor if he only would—that profits should have varied and been greatly reduced; that there should have been hard times for the owners of capital, hard times for the owners of property, especially in land, who could not adjust themselves at once to the new conditions, as well as hard times for the common laborer, whose customary work has been displaced by machinery? All these are but incidents in progress, more marked in the period when progress is most rapid. They are a part of the penalty of invention.

Both statistics and observation tend to prove similar progress in Great Britain, perhaps not in equal measure, because you have burdens to bear from which we are free.

Germany has also gained since her money was recoined in 1873, when the gold standard was established, and when her present coined money, consisting in part of gold and in part of silver, was substituted for 17 varieties of gold money, 66 different silver pieces, and 46 kinds of notes issued by 35 different banks, besides a considerable amount and variety of state paper money.* But whether this gain has more than counterbalanced the increasing burden of taxation and the increasing drain of her military system is a matter of doubt.

Whether France and Italy can continue to bear the military system and to support armies which seem to be as impossible to be disbanded as they are incapable of being sustained without national bankruptcy, are problems for the future to solve, perhaps at no very distant day.

But, compared to these beneficent forces which make for abundance, and these maleficent forces which waste this abundance, what weight should be given to changes in the acts of legal tender, or to the adoption of one metal as the unit of value rather than the alternate or option of two metals?

Having thus brought the question into definite terms on the basis of facts, it may well be admitted that the depreciation of silver at the financial centers, and the "dislocation" of the exchanges, as it has been called, between the gold-standard and the silver-standard nations, is a grave misfortune, and one that requires a remedy, if a remedy can be found. I think the low price of silver bullion is due to a prolonged scare or undue discredit, which is not warranted by facts, and that the remedy will come when there is a true comprehension of what bimetallism really is, and a true understanding of what may be accomplished by acts of legal tender.

If the proposition can be sustained that bimetallism exists *de facto*, and that gold and silver have been adopted as money metals by a process of natural selection, and not through the evolution of statute law, then it follows that both will survive as money metals, in spite of changes in the statues of legal tender.

But the important consideration is that acts of legal tender may alter the distribution of the two metals, and, in the adjustment to the new conditions which are brought into force by such acts, great changes may be worked for a time in the ratio of one to the other.

A certain proportion of each year's product of gold and silver will pass into the world's stock of money in one place or another, without much regard to statutes, but more of the gold may go where gold is the single legal tender, and more of the silver may go where silver is the necessary money metal.

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* See report of H. B. M. Consul Strachey, March, 1887.

What proportion of the present product of gold or silver is used in the arts, how much is used for bangles or other ornaments, how much is used in gilding the domes or towers of the temples of Asia, how much is hoarded, may perhaps be surmised, but can not be accurately computed. Suffice it that the greater part has been, and will continue to be, coined into money.

If, then, the long continuance of certain acts of legal tender had caused the two metals to be distributed in one way, it follows that important changes in such statutes and an important cessation of coinage may have worked a certain change in such distribution.

Is not this what occurred in 1873, and subsequently?

If these changes in acts of legal tender have only altered the distribution of the two metals without affecting their use as money metals in any important measure, we are led to the most important branch of the question, to wit: Which metal is most likely to be in the quickest demand for coinage into money in the next ten or twenty years, silver or gold? Of which is there most likely to be a relative scarcity, silver or gold? Which is most likely to rise in the ratio to the other, silver or gold? Assuming that no important change is made in the existing statutes in that term.

If I were to suggest that it would possibly and even probably be silver, you might be startled. Let us again look at the facts and see what they indicate.

The existing dread of an "avalanche of silver," or of an excessive product in the North American continent, there is now reason to believe to be without foundation. Having been greatly misled myself on this point when I first began to study this question, I am now the more anxious to remove this fear; but, not expecting to meet it here at this late day, I am not as well supplied with evidence as I hope to be soon.

I am, however, permitted to quote from a recent letter of Dr. T. Sterry Hunt, who is here with us.

He says: "So far as Canada is concerned, the Silver Islet mine gave, perhaps, $3,000,000 in all, and has been abandoned. Since 1872, when I visited the famous silver mines of the north shore of Lake Superior, the cry has been periodically raised that they were of fabulous value, but not one has yet been worked.

"As to our own western region, you know that the great Comstock lode is now exhausted, or nearly so. I was last May in Tombstone, Ariz., a famous seat of silver production for many years—now at a stand-still. Along the line of the Sonora Railroad, from Benson to Nogales, there are two or three large silver mills which I saw lying idle for want of use. Do not mistake me; there are still, and will long be, rich silver-producing camps. * * * There is, and there will be, for a long time, a large and healthy mining industry, and much silver and gold will be produced; but from all I have seen and heard, *I think that the excessive silver production is a thing of the past.*" (The italics are my own.)

This statement of Dr. Hunt's corresponds with all the impressions which I have received in recent years, and will probably be sustained by the testimony of other experts, which will be taken.*

You will observe how very different this is from the vague talk of producing silver at a shilling to 20 pence per ounce, such as I find in many places. If any such production were possible, surely the silver would come as freely at 44 pence as at a higher price.

May it not then be held that there has been no overproduction of silver, and that there cannot be, unless all mints are closed against silver coinage, and at the same time all nations, civilized, semi-civilized, or barbarous, unite in such a distrust of the white metal as to be no longer willing to use it. Is not this an absurdity, an almost unthinkable proposition? If such are the facts of the past and the conditions of the present, may not the present depression in the price of silver bullion in London be a mere passing incident in the adjustment of the two money metals to the new conditions of distribution which were brought into force by the acts of Germany and the Latin Union in 1873?

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* Since writing the foregoing I have been permitted to read the paper prepared by Mr. William Topley, F. G. S., for this meeting, upon the probable future production of gold and silver, and I observe that in respect to silver he has reached the conclusion that any considerable increase on the present product will depend mainly upon an advance in the present price of bullion.

From what is now known of the conditions of mining in the United States, I have reached the conclusion that it would probably require a large advance in price to develop any considerable increase of silver. If upon further investigation such should not appear to be the fact, and an increasing product at a lower cost without corresponding increase of demand should appear to be in view, the theory that a higher value and price can be forced by an act of international legal tender will be received with yet more hesitation than it is now.

Even the disposition of the admittedly large product of silver in the face of conditions adverse to its price since 1873 may be cited to sustain this view.

For thirteen years prior to 1873, inclusive, the world's production of silver, measured in dollars of 412½ grains each, was, in round figures, $700,000,000.

In 1873 it is said to have been "demonetized," "outlawed," or "boycotted."

In thirteen years, since 1873, the product has been over $1,300,000,000.

The coinage of "Bland" dollars, so called in the United States, has taken up but little more than Germany sold, so that nearly this entire product has been put into the market. What wonder that when the conditions of trade threw most of this product upon the London market, where it met the increasing competition of India bills, the price should have fallen so that the gold value of this bullion may not have been much over a thousand million dollars.

But even that sum would be called, in the United States, "a pretty big pile." What has become of it? Has the so-called "demonetization" of silver, and the adoption of a single legal tender on a gold basis by about one-sixth or one-seventh part of the population of the globe, made the whole world so prosperous that this whole big pile has been converted into plate or bangles? If such is the fact, perhaps the less discussion about "remonetization" the better. But the very idea is absurd; the increasing commerce of the silver-using continents has required more coined money made of silver, and will soon call for yet more. The action of France and Germany has not altered the volume of coined money, but has merely changed its distribution. The balance may be nearly adjusted.*

Again, since 1873 has there been any sign of a scarcity of gold anywhere? Has not gold filled the small channels from which silver had been displaced, without any appreciable effect upon the vast stock which has been added since 1850? Are there not ample and sufficient causes for the fall in prices of all the necessaries of life without the need of imagining a scarcity of gold? Had this fall in the price of the products of labor been due to a scarcity of gold, would not the price of the labor itself have been reduced? Has not the reduction in prices been most beneficent when accompanied by a steady rise in the rate or in the purchasing power of the wages?

"Of what consequence is it what happens to the millionaire so long as the million prosper?"

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*General Survey of the Production of Gold and Silver in the Years 1493–1885, as Corrected by Dr. Adolf Soetbeer in the 2d Edition of his Materialien, October, 1886.

Period.	Weight.			
	Gold, annual average.	Silver, annual average.	Percentage.	
			Gold.	Silver.
	Kilograms.	*Kilograms.*	*Per cent.*	*Per cent.*
1493–1520	5,800	47,000	11.0	89.0
1521–1544	7,160	90,200	7.4	92.6
1545–1560	8,510	311,600	2.7	97.3
1561–1580	6,840	299,500	2.2	97.8
1581–1600	7,380	418,900	1.7	98.3
1601–1620	8,520	422,900	2.0	98.0
1621–1640	8,300	393,600	2.1	97.9
1641–1660	8,770	366,300	2.3	97.7
1661–1680	9,260	337,000	2.7	97.3
1681–1700	10,765	341,900	3.1	96.9
1701–1720	12,820	355,600	3.5	96.5
1721–1740	19,080	431,200	4.2	95.8
1741–1760	24,610	533,145	4.4	95.6
1761–1780	20,705	652,740	3.1	96.9
1781–1800	17,790	879,060	2.0	98.0
1801–1810	17,778	394,150	1.9	98.1
1811–1820	11,445	540,770	2.1	97.9
1821–1830	14,216	460,560	3.0	97.0
1831–1840	20,289	596,450	3.3	96.7
1841–1850	54,759	780,415	6.6	93.4
1851–1855	179,388	886,115	18.4	81.6
1856–1860	201,750	904,940	18.2	81.8
1861–1865	185,057	1,101,150	14.4	85.6
1866–1870	195,026	1,339,085	12.7	87.3
1871–1875	173,904	1,969,425	8.1	91.9
1876–1880	172,414	2,450,252	6.6	93.4
1881–1885	149,137	2,861,709	5.0	95.0

Production of Gold and Silver, 1886.—J. P. Kimball, *Director U. S. Mint.*

May it not be held that the same forces which have brought into existence this huge modern abundance of products—which have made the whole world a neighborhood, and which have given new and wide opportunities for commerce among men—have not only worked economy in the use of gold, but have also created a new and increasing demand for silver?

The railroad, the telegraph, the steamship, the Suez Canal, and the improvement in the methods of banking have all tended to great economy in the use of gold. Have not these same forces, by increasing the number and the aggregate of small transactions and widening commerce, also greatly increased the use of silver coin? If not, again I ask, What has become of the silver?

When we consider the vast changes, in fact, the *social revolution*, which has been brought about by the railroad and the steamship in what are called civilized countries in the last fifteen or twenty years by the mere improvement and extension of the system already established, may we not predicate a yet more profound change in the condition of society in Asia, Africa, South and Central America, as the railway opens India and Turkestan, passes across the Andes, regenerates Mexico, develops the vast temperate and fertile region of the Paraguay and Parana? Yet more when the Chinese wall gives way, when the Euphrates is paralleled, and when the Trans-Siberian Railway is completed, and eighty days become too long for a trip around the world?

Will not the commerce of the people on these new lines be vastly increased? Will not their commerce with other nations be greatly extended? What money will they use? What coin must they adopt? Must it not be silver? Then in what measure will the present product of silver suffice to meet the increasing demand?

If silver is not and cannot be demonetized, and if gold can be yet more economized, what will be the relative conditions of supply and demand, and what will be the ratio of one metal to the other ten or twenty years from this time? Who can tell?

It follows from the course of reasoning which I have presented, provided it can be sustained, that the principal effect of the action of Germany and the Latin Union since 1873 has been to throw the exchanges between the gold-standard and the silver-standard nations into great confusion, involving expense and loss to large numbers of persons, and for a time affecting the prices of imports and exports in some small measure.

It seems to me, however, utterly untenable to allege that the depreciation of the rupee, in the exchange between India and Great Britain, has worked an equivalent bounty on Indian wheat exported. Had such been the case, there could have been no such fall in the price of silver bullion in London, but the excessive profit on the India traffic would have caused instant competition to secure bullion for remittance. I believe the India merchants who have testified before the royal commission have disproved this fallacy.

In order that true consideration should be given to the effect of the competition of India wheat, under the alleged stimulus of the depreciation of the rupee in London, while it is said to have retained substantially its full value to the grower in India, an analysis should be made of the change in the condition in American competition since 1870 to 1873, by which the wheat grown in America on a distinctly appreciating currency from 1870 to 1879, and since then on a gold basis, has held its place as the prime factor in the supply of Great Britain, and still holds it while the imports from India are diminishing.

The first consideration is to be given to the reduction in the railway charge for moving produce from Chicago to the sea-board, a little less than 1,000 miles. This reduction has been on the average traffic a little more than 1 cent per ton per mile, comparing the rates of 1870 to 1873, inclusive, with those of 1883 to 1886, inclusive. A very large portion of the wheat crop of the United States is grown in Minnesota, Dakota, Kansas, and other places, 500 miles or more west of Chicago, and it is the wheat from these new lands which makes the price. West of Chicago the extension of the railway system, the construction of elevators all over the country and other improvements, have made a yet greater reduction in the cost of handling and moving wheat since 1873. If, then, we assume that the charge for moving wheat 1,500 miles has been reduced only three-quarters of a cent a ton per mile, or only 75 per cent. of the actual average east of Chicago, we get a saving on one ton of 33⅓ bushels of 60 pounds each of 33¾ cents per bushel; or, at 8 bushels to the quarter, $2.70. Disregarding fractions this item only is 11 shillings per quarter. In the same period the cost of moving grain from New York or Boston to Liverpool has been reduced one-half or more, say 2 shillings, per quarter. Add these two sums to 34 shillings, a price in Mark Lane at which the supply of India wheat is checked while that from America continues, and we have 47 shillings. But this is but a part of the change which has enabled the wheat or flour of the United States to be laid down in Great Britain at so low a price. See note at end of Appendix A.

Improvements in the machinery of agriculture have enabled farmers to increase the grain crop since 1870 35 per cent. in excess of the increase in population, with no relative gain in the number of persons devoted to agriculture. In the same period an equal if not a greater gain has been made in the process of milling. The wages of farm laborers have risen, but proportionately less in number are required to do the work, while the interest which the farmer now pays on money borrowed on mortgage has been reduced nearly one-half.

Taking all these changes into view, I think it is safe to say that 34 shillings per quarter in Mark Lane is as sure to maintain the import of American wheat in increasing volume as 50 shillings in 1870 to 1873 was sure to do so; and, if I am correctly informed, the import of India wheat will be likely to diminish at this price.

I think it must therefore be admitted that if the depreciation of the rupee in London has for a short time stimulated the export of wheat from India, it can not long be depended upon; therefore, the pending issue on the silver question may not be much longer obscured by this side issue. If it is important to English agriculture to raise the price of bread, some other way must be found than to change the present monetary system, either of Great Britain or India.

In all the many analyses which I have made to determine the causes of the fall in the prices of the necessaries of life, I find similar causes working to the beneficent result of lower cost, lower price, and better conditions or higher wages to those who perform the actual labor.

Nevertheless this great variation and fluctuation in the rate of exchange is an evil, and if it can be removed by an international agreement for a common legal tender of either gold or silver at a fixed ratio the effort to establish such a treaty is worth all the attention which is given to it; and to that end I have endeavored to bring the question, What is bimetallism?

It seems to me that this question may be at last resolved into two or three very simple propositions already stated.

Will a treaty of legal tender among the principal commercial and manufacturing nations to the effect that either silver or gold coin of given weight and fineness, at a ratio of 15½ to 1, or any other agreed ratio, serve to bind the two metals into one mass as a standard of deferred payments, and do away with the variations of exchange in current international trade?

Or, in other words, bimetallism existing *de facto*, and the new distribution of the metals worked by the acts of 1873 being completed, will a uniform act of legal tender, enforcing the acceptance of either metal by creditors in liquidation of debts, cause such two metals to maintain the agreed ratio to each other in all transactions, whether cash or on credit?

If such results can be attained, then the chief purpose of those who are now called bimetallists may be admitted to be scientifically possible, even by those who cannot accept the arguments or statements upon which they now base their somewhat imperative demands.

If, however, such results may not be attained by statute, then the ratio of silver to gold will establish itself hereafter as it has heretofore, according to the circumstances and conditions of the times, and neither statutes nor treaty will have any permanent effect, whatever temporary fluctuation or variation they may cause.

It is very easy to conceive that commerce would go on by the measure of price, and with the use of coined money as an instrument of exchange, if *all* acts of legal tender were repealed. In such event all coins would become what I believe the silver taels of China are—mere weights of metal—and all contracts could be enforced at law in the weight of the metal promised, as the rents of a certain great water-power in Massachusetts have been enforced in so many pennyweights of silver, these leases having been executed about thirty years since, when the same "scare" prevailed about gold which now prevails about silver.

Under such conditions, *i. e.*, in the absence of any acts of legal tender, gold and silver would attain a certain ratio to each other, according to the emission of the metals by nature and the cost of production covering centuries of the work of man.

The varying cost of one year, or of one generation, might have little effect on this ratio, because the product is not like that of other articles which must be consumed in order that they may be reproduced; but each year's product is an accretion to the pre-existing mass accumulated through the centuries.

It must be admitted, however, that acts of legal tender have become an integral part of the law of contracts—they now vary among nations.

Will a uniform act of legal tender assure stability in the ratio of silver to gold? Are there any known facts from which an answer can be deduced?

What effect on the future production of either gold or silver such an act or treaty would have for a time may perhaps be answered only in Yankee fashion by asking another question.

Had the "scare" about gold between 1850 and 1860 closed the mints of Germany and the Latin Union to gold, and limited the full legal tender of these nations and of the United States to silver coin, with the free coinage of gold maintained only in Great Britain, what would have been the effect on the ratio of gold to silver since then in commercial countries?

In this treatise my whole attempt has been to clear away misconception, and to define the issue, while at the same time presenting considerations which seem to me most important, but which do not yet appear to have received much attention.

It would not be within the scope and purpose of this paper for me to give any review of the present state of opinion on this subject in this country, on the Continent, or in the United States at this time.

I have been obliged to prepare this treatise in the short intervals of a hasty and busy journey; this must be my excuse for the lack of concentration.

INTERLAKEN, *August* 15, 1887.

ADDENDA.

While this treatise was passing through the press, I have had the opportunity to give a partial review to the testimony which has been presented to the Royal Commission. I find in it abundant evidence sustaining the positions which I have taken, to wit:

(1) The mass of gold in existence has been sufficient to enable Germany to adopt the gold standard of legal tender, the United States and Italy to resume specie payment substantially on a gold standard, the Latin Union to cease silver coinage and to maintain their existing stock of legal-tender silver coin at par in gold, without creating any apparent scarcity of gold, and without any special influence in depressing the prices of commodities or services.

(2) The reduction in the price of commodities has been no greater than would be warranted by and might have been expected from the improvements in the processes of production and distribution. This reduction, having been accompanied by a general maintenance or rise in the price or rate of wages, has been almost wholly beneficial, temporary hardship to special classes being admitted.

(3) The changes which have been worked by the action of Germany and the Latin Union in 1873, and subsequently, have caused a local and probably temporary depreciation of silver and not an appreciation of gold.

(4) The "dislocation of the exchanges," as it has been called, between the gold legal-tender and the silver-standard nations has been injurious to certain classes, notably to those who have had occasion to make cash remittances from silver to gold-standard countries. This variation in exchange has also tended to make the export traffic from the gold-standard or manufacturing nations more complex, and has subjected it to a little increased cost in bankers' charges, but has not altered the volume of traffic. It may perhaps have given a slight and temporary stimulus to the export of wheat and other products from India and other silver-standard nations, whether to their ultimate benefit or injury does not yet appear, as the subject is only treated in the testimony with reference to the production of these countries and not with reference to their consumption.

(5) The testimony is fairly concurrent and conclusive that silver has not yet depreciated to any measurable extent among the great populations to whom it is the principal money metal, as well as one of the principal subjects of accumulation as realized wealth.

(6) In the fact that silver has thus maintained its value in the domestic commerce of the greater part of the population of the globe, in the face of an addition to the volume of metal in thirteen years since 1873, equivalent to over 1,300,000,000 dollars of 412½ grains each, 90 per cent. fine, it follows that the depreciation of silver must have been limited to the financial centers, the coinage of the United States having only taken up an amount of bullion equal to that disused by Germany and other States of Europe.

(7) This great additional volume of silver bullion, having been forced through one spout in London, has been there compressed or locally reduced in value, because it could not accumulate; after it has passed through this spout it has been expanded and merged in the great mass of silver possessed by the silver-using continents, and has had so little effect as not to have yet caused an appreciable advance in prices or wages in those silver-using countries.

(8) It may be assumed that the silver coined by the United States up to this time, now represented dollar for dollar, in silver certificates, will be required in the present circulation to make up for the contraction in bank notes or United States notes, and that its convertibility into gold coin will surely be maintained. If, then, the depreciation of silver in the financial centers is substantially limited to such centers, it follows that the price of silver bullion must recover until it becomes equal to the mass of silver in use in silver-standard countries in its purchasing power; but at what ratio of silver to gold this equilibrium will be re-established does not yet appear.

(9) In order to restore this equilibrium it may be necessary or expedient for the gold-standard, or manufacturing nations to remove the duties on the crude materials or articles of food which are the chief product of silver-using nations, in order that the consumption of these products may be increased, and a direct exchange for silver for them may be established.

(10) Even if it were admitted that the policy which is advocated under the name of a "Bimetallic Treaty" among nations, had it been adopted, or had the free coinage of silver continued as it was before 1873 in Germany and the Latin Union, would have prevented the great depression in the price of bullion in London, it does not yet appear that even such conditions would have assured absolute stability in that price or ratio.

The argument for a bimetallic treaty, therefore, rests for its support not so much on experience as on the conception of those who urge its adoption, that the value, force, or purchasing power of money is derived from one of the provisions of the modern law of contracts, and that it is necessary to the circulation and use of coined money that it shall be legal tender for deferred payments.

(11) If the consideration of the question be too strictly limited to the discussion of this theory, and but little attention be given to the facts, it may happen that the restoration of silver to its proper estimation may be retarded, and the evils now due to depression may be longer continued than would be the case if less importance were attributed to monetary legislation and more weight were given to the higher laws governing value and controlling commerce, to which all statutes must be adjusted if they are to have any permanent effect or duration.

(12) While there is no immediate prospect of the negotiation of a "bimetallic treaty," the subject is beginning to assume its true importance, and its discussion cannot fail to lead to many measures of improvement, not only in respect to international coinage and legal tender, but perhaps to weights and measures.

LONDON, *August* 25, 1887.

[1] Note to page 24 :

In order that the importance of railways as a factor in prices, especially of farm products, may be fully comprehended, I append the following tables which I prepared in January of the present year for another purpose. I requested Mr. Henry V. Poor, editor of the Railway Manual, to give me the particulars of the traffic of the great trunk lines of railroad from 1865 to date, year by year. There are six which enter Chicago, and there are twenty-one which in combinations connect Chicago with the eastern sea-board. These twenty-seven trunk lines did about half the work of the country last year. The reduction in their charge for this service between the years 1865 to 1868, inclusive, averaged, and their charge in the year 1885, was 1⅜ cents per ton per mile, which, being computed on the actual traffic of the year 1885, proved that the traffic of last year cost $800,000,000 less than it would have cost at what were considered reasonable rates twenty years ago.

The actual saving of the last four years, 1882 to 1885, inclusive, as compared with the previous period, has been $1,500,000,000. There are about 1,700 other lines of railroad which, separately or in groups, do the rest of the work, mostly that of distribution, or what may be called the crossway traffic. Their rates are now a little higher than on the through lines; they were a great deal higher twenty years ago. The saving of the last four years on all the railroads of the country, as compared to what the work would have cost twenty years ago, has been $750,000,000 a year, or $3,000,000,000 in all. This reduction in the railway charge for carrying food, fuel, fibers, and fabrics about the country is equal to 7 per cent. reduction in cost to consumers on the entire product of everything made in the United States in each year. The sum of money thus saved in four years, applied at the rate of $30,000 per mile, would have paid for the construction of 100,000 miles of new railway, which have been added to our service between January 1, 1865, and January, 1887. The entire area of land which is now under the plow in the United States, omitting that devoted to pasturage, is a little over 300,000 square miles.

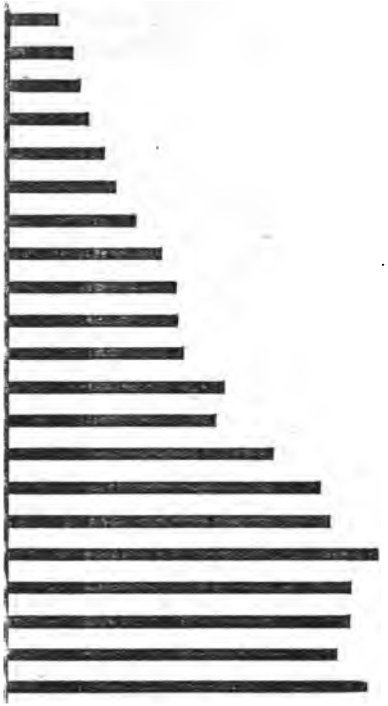
The new lines of railway, covering 100,000 linear miles, have opened a strip of land 5 miles on each side, amounting to 1,000,000 square miles. It therefore follows that in twenty-two years an area of land three times that which is under the plow has been brought within less than 5 miles of a railroad as to every acre. This is one-third of the territory of the United States, omitting Alaska. The effect of this great reduction in railway charge, especially on the long haul, has enabled the country to dispose of its excess of wheat, corn, meat, and dairy products which it could not have consumed, and which, except they had been exported, would have either rotted upon the field or else could not have been produced. In the year 1880 (no computations since) at least 17 per cent. of that part of the population which is engaged in agriculture found their market exclusively in a foreign country. Their number was at least 1,360,000 men out of the 8,000,000 occupied directly in agriculture or in moving the products of agriculture to the sea-board. The average excess of imports over and above exports in this country was $100,000,000 a year, from 1866 to 1873, inclusive. The import and export traffic of 1874 and 1875 balanced each other.

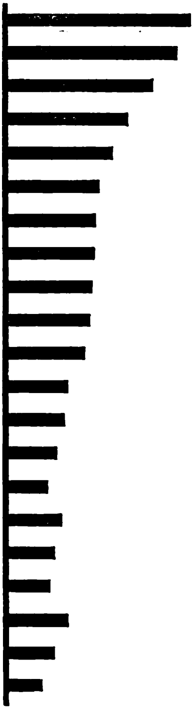
In the year 1876, for the first time, the average freight charge on the roads connecting Chicago with the sea-board was reduced from 2½ cents a ton a mile in 1866 to less than 1 cent per ton per mile. The average of the ten years, 1876 to 1885, has been eight-tenths of a cent per ton per mile. It is this cheap transportation which has enabled us to export in the years 1876 to 1885, inclusive, nearly $1,600,000,000 worth of product in excess of our import; this excess has consisted wholly of grain and provisions. Without this export specie payment could not have been resumed, nor could the industry of the country have gone on in its accustomed way. The whole traffic of all the railways of the United States is now over 50,000,000,000 tons moved one mile every year.

THE FOOD PROVIDERS.

Pennsylvania, Pittsburg, Fort Wayne and Chicago, New York Central and Hudson River Railroad, Lake Shore and Michigan Southern, Michigan Central, Boston and Albany, New York, Lake Erie and Western Railroads. Graphically compiled by Edward Atkinson, from a pamphlet by Henry V. Poor.

Year.	Tons moved.	Tons moved one mile.	Charge per ton per mile.
1865	11,151,701	1,634,324,000	2.900
1866	12,099,426	2,044,412,000	2.546
1867	15,594,454	2,258,220,000	2.306
1868	17,467,693	2,651,575,000	1.951
1869	20,556,155	3,159,539,000	1.715
1870	21,456,135	3,744,110,000	1.585
1871	25,098,953	4,341,127,000	1.478
1872	28,634,347	5,181,259,000	1.475
1873	32,817,327	5,782,059,000	1.470
1874	32,899,152	5,879,658,000	1.342
1875	32,956,655	5,937,240,000	1.161
1876	36,166,865	6,739,524,000	.983
1877	36,134,676	6,536,994,000	.971
1878	39,124,612	8,853,397,000	.807
1879	48,585,226	10,120,776,000	.725
1880	53,937,397	10,544,831,000	.840
1881	62,616,014	11,659,998,000	.759
1882	64,948,002	11,189,000,000	.665
1883	66,695,608	11,141,726,000	.842
1884	64,397,566	10,719,518,000	.740
1885	66,521,152	11,331,306,000	.636



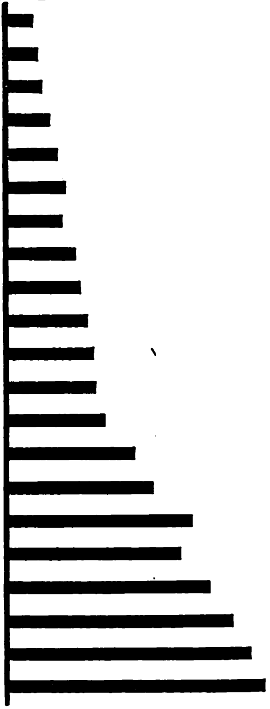


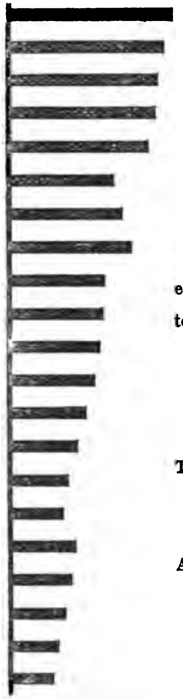
These railway lines carried somewhat less than one-quarter of the tons moved 1 mile in 1885.

This traffic of 1885, at the charge of 1865, would have cost.. $328,607,874
Actual charge 72,138,792
Difference...$256,469,082

Illinois Central, Chicago and Alton, Chicago and Rock Island, Chicago, Burlington and Quincy, Chicago and Northwestern, and the Milwaukee and St. Paul railroads.

Year.	Tons moved.	Tons moved one mile.	Charge per ton per mile.
1865	4,032,166	513,421,459	3.642
1866	4,803,205	576,886,638	3.459
1867	6,303,783	768,171,050	3.175
1868	7,064,305	893,856,984	3.154
1869	8,071,568	1,054,559,835	3.026
1870	8,540,579	1,234,678,291	2.423
1871	9,391,684	1,233,058,058	2.509
1872	10,592,414	1,437,038 063	2.582
1873	11,958,467	1,719,49 ,690	2.188
1874	12,637,729	1,851,645,824	2.160
1875	12,662,768	1,914,937,377	1.979
1876	13,488,204	1,994,712,255	1.877
1877	13,364,721	2,211,021,475	1.664
1878	15,705,226	2,822,885,886	1.476
1879	18,806,956	3,470,822,877	1.280
1880	24,215,307	4,544,469,655	1.266
1881	28,076,047	4,435,202,005	1.420
1882	29,851,868	5,041,330,034	1.364
1883	31,663,979	5,768,173,429	1.308
1884	32,573,518	5,910,110,011	1.251
1885	34,343,684	6,287,346,541	1.200



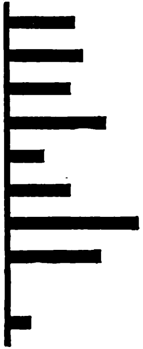
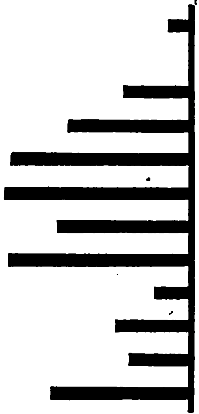


These lines carried almost exactly one-eighth of the tons moved 1 mile in 1885.

This traffic of 1885, at the charge of 1865, would have

cost.........	$228,985,161
Actual charge	75,307,684
Difference...	$153,677,477

A graphical statement, showing the effect of the reduction in the charge for moving provisions long distances at the lowest possible rates, in enabling farmers to sell grain and meat for export which could not otherwise have been sold at all, thereby bringing about the restoration of specie payments. The balance of exports over imports for ten years has consisted wholly of form products.

Year.	Exports.		Excess of exports.	Railroad charge per ton per mile.		Excess of imports.		Imports.	Year.
				To Chicago.	From Chicago.				
				Cents.	*Cents.*				
1866....	$348,859,522			3.459	2.546	$85,952,544		$434,812,066	1866
1867....	294,506,141			3.175	2.306	101,254,955		395,761,096	1867
1868....	281,952,899			3.154	1.951	75,483,541		357,436,440	1868
1869....	286,117,607			3.026	1.715	131,388,682		417,506,379	1869
1870....	392,771,768			2.423	1.585	43,186,640		435,958,408	1870
1871....	442,820,178			2.509	1.478	77,403,506		520,223,684	1871
1872....	444,177,586			2.582	1.475	182,417,491		626,595,077	1872
1873....	522,479,922			2.188	1.470	119,656,288		642,136,210	1873
1874....	586,283,040		$18,876,698	2.160	1.342			567,406,342	1874
1875....	513,442,711			1.979	1.161	19,562,725		533,005,436	1875
1876....	540,334,671		79,643,481	1.877	.983			460,741,190	1876
1877....	602,475,220		151,152,094	1.664	.971			451,323,126	1877
1878....	694,865,763		257,814,231	1.476	.807			437,051,532	1878
1879....	710,439,441		264,661,666	1.280	.725			445,777,775	1879
1880....	835,638,658		167,683,912	1.266	.840			667,954,746	1880
1881....	902,377,346		259,712,718	1.420	.759			642,664,628	1881
1882....	750,542,257		35,902,683	1.364	.665			714,639,574	1882
1883....	823,839,402		100,658,488	1.308	.842			723,180,914	1883
1884....	740,513,609		72,815,916	1.251	.740			667,697,693	1884
1885....	742,189,755		184,662,426	1.200	.636			557,527,329	1885

Merchandise traffic of all the railways of the United States in 1885; authority, Poor's Railway Manual, 1886:

Tons moved	437,040,099
Tons moved 1 mile	49,151,894,469
Charge for service	$519,690,992
Rate per ton per mile ....cents..	1.057

Twenty-seven trunk lines which, separately or in combination, center in Chicago from the West or connect Chicago with the eastern seaboard:

Tons moved	185,320,709
Tons moved 1 mile	25,125,076,247
Charge for service	$219,872,732
Rate per ton per mile ....cents..	.875

All other lines:

Tons moved	251,719,390
Tons moved 1 mile	24,026,818,222
Charge for service	$299,818,260
Rate per ton per mile ....cents..	1.248

Measure of this service per head of population and per family:

Lines.	Tons per person per year.	Distance hauled.	Charge per person.	Charge per family of five persons.
		Miles.		
Twenty-seven trunk lines	3.252	136	$3.68	$18.40
All others	4.420	95½	5.26	26.30
Total	7.672	111½ Average.	$8.94	$44.70

The average charge per ton per mile on the 27 trunk lines in the years 1865 to 1868, inclusive, exceeded that of 1885 by 1.635 cents. At this rate of excess, applied to the whole traffic of the United States, all other lines having made a greater reduction, so far as the data can be had, the sum saved in the year 1885 was $803,633,477.

The whole service of all the railroads in 1885 consisted in moving 42 pounds a day of food, fuel, fibers, and fabrics, a distance of 111½ miles for each man, woman, and child of the population, or 1,470 pounds a week for a family of five. The average charge to each person was a fraction under 2½ cents per day, or 87½ cents per week for each family of five.

The 27 trunk lines treated in the foregoing tables perform about one-half the freight service of the United States. The average charge per ton per mile on those lines, 1866 to 1873, inclusive, was	2.315 cents per ton.
1874 to 1885	1.196
Difference	1.119
Had the actual traffic of those lines from 1874 to 1885 been charged the difference, the amount of such additional charge would have been over	$1,756,000,000
The excess of exports over imports in this same period was	$1,574,021,528

APPENDIX B.

The following very instructive paper, read by Prof. H. B. Greven, of Leiden, Holland, is submitted, both as an interesting chapter in monetary history, but also to show how a very large volume of silver coin may be maintained at par in gold, *after the suspension of silver coinage*, provided its redemption is assured in gold coin by a national agency authorized thereto by legislation.

In my investigations in Europe I found that one of the causes of the discredit of silver was the fear of the accumulation of silver coin in the Treasury of the United States becoming greater than the country would bear, the manner in which it is now utilized by the issue of silver certificates not being comprehended in countries where small notes are not known or in circulation. I am very confident that if the fear in Europe of an "avalanche of silver" from the United States were removed, the increasing demand for silver might soon allay the present doubt of the value of silver bullion and that the price might consequently advance. In such event, the free coinage of silver would have a much fairer chance of consideration.

E. A.

NOTE ON THE MONETARY SYSTEM OF THE NETHERLANDS.

[Paper read by Prof. H. B. Greven, of Leiden, before the economic section of the British Association at Manchester, on Wednesday, September 7, 1887.]

Our monetary history since 1873 presents some very interesting features. Until that date we had the single silver standard. Owing to the changes in Germany and the countries in the north of Europe, who had passed over to the single gold standard, the coinage of silver was suspended in the spring of 1873, and since that time we have been in a very curious position for two years. Silver could be no longer brought to the mint, and gold coin could not be issued, because Parliament could not agree on the weight to be given to the gold piece and rejected all proposals for introducing a gold standard. We possessed a fixed quantity of silver coins, and their value was regulated neither by the variations of gold in the market nor by those of silver. In fact, the value of our florin was quite independent of any metal, and depended only on supply and demand. Now, the demand for coin was increasing in the years 1873 to 1875, and the result was that while silver as a *metal* was going down in the market our silver *coins* were appreciated as against gold. The rate of exchange on London, which oscillates now on the gold basis between 12.1 and 12.3 florins for a pound sterling, shrank to 11.12 florins. We could not possibly remain in that unnatural position, and so in 1875 a gold piece was issued, coined at the ratio of 15⅝ parts of silver against 1 of gold. Since that time our monetary system can be described, in the words of Mr. Cernuschi, as that of the "*étalon double boiteux*," the double standard, but crippled in so far as the coinage of silver is forbidden. The value of the florin solely depends on the variations of gold, but the coins in circulation are most of them tokens. They are legal tender for all payments. A silver florin cannot possibly be of less value than that of one-tenth part of the gold 10-florin piece, but their intrinsic value is 15 to 20 per cent. less.

Thus the only way of extending the specie circulation is the coining of gold. Some £6,000,000 of gold coin have been issued since 1875, but we were not sure to keep them in the country. Our position, indeed, had considerable dangers. When the balance of international payments required export of specie, the gold coin only could be used for that purpose without loss. Should the bankers have sold our silver florins in the London market they should have lost the difference between the intrinsic value and the mint value.

Now, for some years after the introduction of gold coinage all went well. The Netherlands bank was always willing to pay its bank notes in gold when the gold was needed for export, but it was very difficult to get any gold for circulation in the country itself. It was a wise policy, this. The silver specie served its purpose *there* equally well, and, our stock of gold being very small in comparison to the whole of the specie, we ought to keep as much of it as possible ready for foreign demand. (I say equally well, because the silver pieces did not circulate in greater number than the public required, and fully covered bank notes were used for payments of greater amount.) The danger of this to our monetary situation appeared in the years 1881 and 1882. The balance of trade turned against us, and the stock of gold ran down to some £600,000, while the silver specie, whose value was appreciated artificially, consisted of about £30,000,000, when we bring into account also the silver in the colonies. Unless some remedial measure was taken, the confidence that payment in Dutch florins was payment in gold would have been lost, and in a short time the gold coins would have sold for more than their nominal value. In other words, there was great danger of an agio of gold, and it ought to be prevented at all cost. The question was, how to effect that result with as little cost as possible. Of course we could have melted down a part of our silver coins, and so diminished the circulation and brought the rates of exchange below the exportation point. Government was prepared to bear the loss on the operation, but only when it was absolutely necessary. An act was passed in April, 1884, which gave powers to the Chancellor of the Exchequer for authorizing the bank to sell at market prices a quantity of 25,000,000 silver florins when the state of the currency requires it. Since then every banker knows that when he needs gold for export, and the bank cannot pay in gold, it will give him so much silver as will enable him to buy a quantity of gold equal in value to so many gold coins as the notes offered for payment represent. In that manner confidence was entirely restored. Nobody now has the least doubt that an agio of gold has become impossible.

This legislative measure has cost us nothing at all to this day, as rates have all along been favorable to our country, and the bank has been able to secure a stock of gold, amounting in the preceding months to about £5,000,000. Thus, without any cost to the treasury, we have been able to maintain our currency on the gold basis ever since 1875. And I wish to add that we have done it without any serious disturbance in the bank rate. It can no doubt be maintained that the rates have been somewhat higher than they ought to have been if our currency had consisted only of gold. The directors of the bank can not consider the silver in their vaults as a basis of the emission of bank notes in just the same way as they do consider the stock of gold. Perhaps even at a lower rate of interest the nominal value in florins of their specie and bullion would have been quite sufficient for their own safety. But, as they wished to pay in gold for export any quantity asked for, this consideration has come in in their decision concerning the rates. Still industry and commerce did not complain of this state of affairs. They did not consider it too high a cost for the maintenance of our currency system, and I think you Englishmen will agree with them when I tell you that the rate of interest on bills, 2½ per cent., has now been absolutely constant since May, 1885, for a period of more than two years. This compares favorably, it seems, with the numerous alterations in the rate of the Bank of England.

Now I propose to add a few words about the monetary relations of our colonies with the mother country, a subject that will specially interest you, because of the very serious disturbances in your trade with India since the beginning of what is usually called the depreciation of silver, and would in my opinion be more truly called the appreciation of gold. I can not deny that we met with difficulties also, but they were of quite another character. Your Indian mints have been open for silver all the time. Holland, on the contrary, has adopted the gold standard for the colonies since 1877. *You* have a different standard in Europe and in India, *we* have got the same. Our Indian florin is a *gold* florin. Indian prices are gold prices. Gold does not circulate at all in Java, indeed there is scarcely any gold in the colonies, and still all these silver florins have the same buying power as so many pieces of gold, containing each one-tenth of our 10-florin gold piece; that is to say, their value is about 20 per cent. above the intrinsic value. So great is the power acts of parliament have on the value of coins, supposed only that the supply of them is limited. You will understand, from what I just said, that by the unity of the standard in the kingdom in Europe and in our Indian domain we escape all the difficulties arising from great and sudden variations in the rate of exchange that gives you so much trouble. The exchange is always at or about par, just as rates between London and Edinburgh or New York and New Orleans. Our difficulties arise from another cause. Your exports from India have been stimulated; our export trade from Java has been impeded. The producers of coffee, sugar, and other tropical products sell their goods in the European market for a diminished price, while many of the elements of their cost of production, and the burden on their estates and manufactories, in so far as they are working with borrowed capital, remain the same, or at any rate do not go down as soon as the prices of the produce. Their margin of profits has disappeared in many cases, they have not been able to repay in due time the working capital they had borrowed from the financial companies, and some of them had to be wound up. But all those difficulties, very real and serious as they are, do result in the last resort from the decrease of prices, in other words from the appreciation of gold, and most of the competent men in our colonies are agreed that we ought to bear them rather than to break the unity of currency over the whole of our European and Indian territory.

These are the main features of our monetary history for the last fifteen years. Our situation is far from satisfactory, it is in the highest degree artificial, and we are constantly on the watch for making such changes as will make the intrinsic value of all our legal-tender coins to correspond to the mint value. How that will be effected will entirely depend on the course of the international negotiations, now pending for many years, for the adoption of a common standard of value. So long as there is any hope that the great commercial nations will come to an agreement for steadying the ratio of exchange between the precious metals—whatever that ratio may be—and for using them both all over the world, there is no reason for changing our present system. But should the case for silver become hopeless, we should be amongst the first to exchange our silver for gold at whatever cost, although we would deplore such a change very much, for the manifold evils arising from a further appreciation of gold and for the irregularities and the injustice that would result from it in the distribution of wealth.

APPENDIX C.

Reference has been made in the text of this report to certain influences which have worked to the discredit of silver in the European market, and which may therefore have in part at least caused a local depression in the price of silver bullion.

The first of these causes has been uncertainty in respect to the production of silver, especially on the North American continent, and to the vague and indefinite dread of an excessive production at a cost much lower than the ruling price of the last few years.

The subsequent letters from geologists of acknowledged standing and reputation will give such information as to the prospective supply of silver bullion and the relative supply as compared to gold, as it is now in the power of science to furnish.

The second influence adverse to confidence in silver, and tending to continue the local depression in its price, seems to have been a general conviction on the part of men of high financial standing and ability that the people of the United States would ere long be convinced that a continued coinage of dollars of the present standard, at a ratio of silver to gold in itself inconsistent with the coinage of any other country, and itself tending to an undervaluation or depreciation of silver as compared to the former standard prevailing in Europe, would ultimately bring the United States to the single silver standard of legal tender, or to what would be called *monometallism* on a depreciated silver basis. It is further believed that when this conviction has become general and the disaster which might ensue had become apparent, it might happen that the United States would suddenly change its policy, stop the coinage of silver, and, in order to maintain the convertibility of all its money into gold on demand, an effort might then be made to dispose of its accumulated stock of standard dollars of the present coinage, as bullion.

As I have previously stated, the use of small notes, convertible into coin on demand, or in the form of certificates sustained by coin, dollar for dollar, is so foreign to the common practice of most European countries, especially England, as to have yet attracted little attention to the real state of facts in the United States.

In nearly all the discussions of the question which have come to my notice it has been assumed that the standard dollars of the present coinage of the United States were almost all piled up in the Treasury—useless and incapable of being circulated because the people would not accept the actual dollars. As this conception of our condition is entirely erroneous, it is important that the fact should be brought into conspicuous notice that the coinage of dollars of the present standard, although it has created a barrier even to the consideration of a bimetallic treaty on the part of European countries, yet it has not impaired the immediate convertibility, directly or indirectly, of the whole currency of the United States into gold coin on demand.

The coin and paper which serve the purposes of money in the United States at the present time consist of seven varieties.

(1) Gold coin of full legal tender computed at	$573,415,740
(2) Silver dollars of full legal tender	273,658,320
(3) Subsidiary silver coin, of limited legal tender	75,398,925
(4) Notes of the United States, commonly known as greenbacks, of full legal tender	346,681,016
(5) Bank-notes, issued by national banks and secured by the deposit of United States interest-bearing bonds, convertible into legal-tender money on demand	272,893,850
(6) Gold certificates, representing coin or bullion, dollar for dollar, convertible on demand	127,138,971
(7) Silver certificates, convertible into silver dollars of full legal tender on demand	158,274,667

The volume of this currency of all sorts, October 1, 1887, was distributed as follows:

Amounts of gold and silver coins and certificates, United States notes, and national-bank notes in circulation October 1, 1887.

	General stock coined or issued.	In Treasury.	Amount in circulation.
Gold coin	$573,415,740	$182,324,850	$391,090,890
Standard silver dollars	273,658,320	213,043,796	60,614,524
Subsidiary silver	75,398,925	24,984,219	50,414,706
Gold certificates	127,138,971	29,154,288	97,984,683
Silver certificates	158,274,667	3,919,841	154,354,826
United States notes	346,681,016	17,610,212	329,070,804
National-bank notes	272,893,850	2,938,593	269,955,257
Total	$1,827,461,489	$473,975,799	$1,353,485,690

It will be observed that the tendency of events is toward a contraction of the paper currency which is not covered by coin. The high price of the United States bonds, which must of necessity be deposited as security for national-bank note circulation, is leading to the surrender of this privilege by the banks, and to a diminution of that form of currency. The surplus revenue of the United States may also tend to accumulate in the Treasury Department in the form of legal-tender notes or in gold coin. If this should occur it would diminish either the amount of legal-tender notes in circulation, or else would back them in full, dollar for dollar, in gold coin, so that they may become simply the counterpart of gold and silver certificates.

This contraction of uncovered paper currency appears to have been met during the past twelve months by a need of a greater volume of another kind for actual use in the form either of coin or of notes. Hence it has occurred that the silver certificates paid out by the Treasury Department have remained in circulation, to the end that while the coinage of silver dollars up to this date has amounted to $275,222,157, there remained in the Treasury on the 20th of October only $55,094,880 which were not in use. The actual dollars in circulation amounted to the sum of $61,847,064, and the amount of silver certificates in circulation amounted to the sum of $158,280,213.

These silver certificates are receivable for taxes the same as gold or coin; but the silver certificates being issued in small sums, and being much more convenient than the coin itself, remain in circulation to a large extent, while the taxes are mainly paid in coin or in gold certificates. So long, therefore, as the coinage of silver dollars is strictly limited, and so long as the demand of the country for small note circulation continues as at present, there is and can be no difficulty in maintaining the convertibility of the silver coin or certificates into gold coin on demand.

These conditions may prove that no danger should be anticipated by the financial authorities of any other country of any attempt on the part of this country to dispose of the silver yet coined by sale in the form of bullion. The ultimate danger that the country may come to monometallism on the standard of depreciated silver coin must be admitted, if the coinage is continued under the present acts of Congress for a sufficient period.

At the present time the standard dollars serve the same purpose as the subsidiary coin, or as the basis for the issue of small notes sustained in full by subsidiary coin.

If the two causes of distrust and of doubt which have been named could be wholly removed from the minds of European financiers, the price of silver bullion might then be established at whatever its true ratio to gold may be, without being adversely affected by misplaced apprehension of much lower prices or by erroneous impressions of the financial condition of the United States.

I beg to submit herewith the replies to my letters of inquiry so far as I have been able to obtain them. Several gentlemen whom I addressed are either absent or too much occupied to give attention to the subject within the limited time. The names and position of those who have complied with my request will be sufficient warranty for the accuracy of their statements. My letters of inquiry were addressed to men of approved position and authority, without any previous knowledge on my part of the testimony which they would give. Their replies may furnish a sounder and safer basis for a decision upon the expediency of stopping the coinage of the present standard dollar until other nations have determined upon their policy than any other statements which it is in my power to give in this report.

Respectfully submitted,

EDWARD ATKINSON.

LETTER FROM PROF. N. S. SHALER, GEOLOGIST U. S. GEOLOGICAL SURVEY.

HARVARD UNIVERSITY,
Cambridge, October 31, 1887.

DEAR SIR: A few years ago I made a somewhat extended study of the geological conditions of our silver and gold supplies, with the view of determining the probable future production of these metals under the existing conditions of the arts involved in winning them to man's use. At your request, I give below a brief synopsis of my results. Within the limits which you have assigned for my writing it will not be possible for me to do more than state the facts as they appeared to me. To give in detail the data on which I have based these judgments would require a considerable volume. I may say that these considerations were quite uninfluenced by any theoretical views concerning the monetary relations of these metals, for on those points I have no right to an opinion, having never given any extended study to the subject.

My inquiry into the geological problems connected with these metals naturally divided itself into two heads: First, the geographical distribution of the sources of supply as determined by the distribution of the geological deposits which contain them; and, secondly, the mode of occurrence of the substances, the way in which they are disposed in deposits where they are found, and their association with other metals. I regret that it is not possible within the limited time given for the preparation of this statement to bring the data into the form a map. I have a great part of the material necessary for such a delineation, but it would require a good deal of time to give it a final form.

First, as regards the distribution of gold, we have to note that, although this metal is one which, owing to its indestructibility, is very widely disseminated in the deposits of all ages, the fields where it is sufficiently abundant to afford profitable mines are relatively inconsiderable in area. Gold occurs in either of two conditions: in veins, where the metal has been aggregated by the peculiar processes which lead to such deposition, and in detrital deposits, composed of the waste of such veins, as in the gravels and sands contained in the beds of streams which flow from regions where gold-bearing veins occur, and in the sands of the sea-shore which have been derived from such streams or from the waste of cliffs containing auriferous deposits.

Although gold-bearing veins have been found in relatively modern strata, they are in the main limited to the highly crystalline rocks lying below the Devonian horizon. By far the greater part of such deposits occur in rocks of Cambrian or Archæan age. Considering only those portions of the earth's surface which have been carefully searched for mineral deposits, we find the area which contains lode gold in sufficient quantities to repay search to amount to somewhere between one-twentieth and one-fortieth of the whole field of the dry land. From the regions where gold-bearing lodes occur the process of erosion has distributed, through the machinery of the streams, the detrital gold in such a manner as to extend the field of possible mining operation until it occupies somewhere near one-twentieth of the total land area. It is hardly necessary to say that in these areas the actual seat of the profitable deposits occupies a relatively small part of the field.

The effect of the twofold mode of occurrence of gold upon the production of the metal is extremely important. That which is contained in lodes has to be slowly won, for the reason that access to such deposits must be had along the exposed edge of the lode by the ordinary mining processes. The deposits contained in detrital gravels, provided these be of recent origin, as are most of the detrital gold deposits now worked, are much easier of access than in the case of the lodes. Access to them may be had at an indefinite number of points, and the superficial material which has to be removed is generally small in quantity. The result is that a newly discovered gold field commonly yields its alluvial store of metal with exceeding rapidity, as in the well-known instance of the California gold-washings. After the stream deposits have been exhausted may come the slower and more costly production from the lodes which by their decay supplied the washings. In certain cases, where circumstances favored the thick accumulation of gravel deposits, we may have for a considerable time the washing process continued by the well-known hydraulic method; but so far the area in which such operations can be carried on with profit appears to be very limited.

Gold occurs in lodes either in association with other valuable metals or alone. The greater part of the lode-gold occurs alone or in association with metals which are not reckoned upon in estimating the cost of production. In certain important groups of mines it is associated with silver. In other cases, along with silver, it is associated with lead, and in yet other instances with less important metals, which are won at the same time with the more precious material.

It is, in a general way at least, true that gold differs from silver in that it has to be mined for itself alone; while, as we shall note hereafter, silver most commonly occurs in combination with other valuable metals. Deposits containing gold alone generally occur in the form of gold-bearing quartz, in which gold exists in an uncombined form or associated with pyrites. Although those quartz veins which bear gold are often very continuous, the area containing profitable amounts of the metal is commonly limited to particular parts of the vein, occurring in the form of *shutes* or *chimneys*. In general, it may be said that the distribution of the precious metal is such as to make the production extremely inconstant.

The result of the above noted division in the distribution of gold is to make the seats of its production more variable and temporary than that of any other metal which has attained an important place in our arts. This point is well shown by the fact that, although the mines which furnished silver, iron, tin, lead, copper, and other metals in the Roman period and during the Middle Ages are still in many instances extensively worked, none of the fields which afforded gold in those periods are now the seat of considerable production. In fact, I cannot recall an instance in which a gold-bearing field extensively wrought during the last century is now an important source of gold supply.

We have now to consider the probability of new discoveries which may lead to the development of unknown gold fields. The fact that gold remains in the streams as a residuum arising from the erosion of the rocks containing auriferous lodes, makes it extremely easy to discover deposits of this nature. It is safe to say that not a stream bed in the United States, in regions where the existence of gold can be suspected, has escaped the study of the prospector. A few hours' work with a miner's pan will adequately determine the chance of finding important deposits of gold in the region whence the stream drains. It may therefore be assumed that, in a general way, we know the auriferous districts of the United States. Local discoveries of particular lodes may be made; but here again the extremely careful search to which the country has been subjected makes it improbable that any fields comparable to those which have been found within the last fifty years will be brought to light. The same may be said of Europe and Western Asia. Even the central and eastern portions of Asia have long been the seat of sufficient civilization to have their possibilities of gold supply in a measure known. It seems to me doubtful if the Asiatic field ever affords extensive areas whence may come supplies of gold comparable to those of Australia and California. The greater portion of South America which is likely to contain gold has also been the seat of very careful search for this metal. Patagonia and the eastern versant of the Andes remain essentially unexplored, but it does not seem likely from the little we know of the geology of these districts that extensive gold deposits will be discovered there.

Those parts of Australia which have a character as regards climate and water supply, fitting them for the needs of the miner, appear on the whole to have been tolerably well explored. The recent extensive discoveries in that country seem to indicate, however, that we may still look to it for the supply of this metal. In North America there remains a considerable area in Alaska and in the northern part of the Dominion of Canada, beyond the limits of settlements, where we may reasonably expect to find considerable gold fields. The conditions of climate in a large part of this region are against the success of all forms of washing, and it is therefore to the lodes alone that we must look for any important supply which this region may afford. Africa is the only continent where we may fairly expect to discover important and as yet untouched fields of gold supply. The little we know concerning the structure of the continent leads us to suppose that it may prove auriferous beyond the average of land areas. The recent discoveries in the southern portion of the continent give great promise of extensive production from that part of the world.

Thus as regards the future possible sources whence low-cost gold may be obtained, we may sum up the facts as follows: By far the greater portion of the gold-bearing rocks of the land areas have already been subjected to careful search. The greater portion of the conveniently winnable alluvial deposits of the land areas have already been exhausted, and probably a larger part of the rich auriferous lodes discovered. In my own opinion quite three-fourths of the possible sources of supply are now tolerably well known, and a greater part of them either exhausted or so far explored that we may not look to them for any sudden accession of supply. With the present rate of advance of civilization on barbarism, it seems safe to say that in fifty years we shall have compassed the resources of gold which are likely to be profitable in the present or foreseeable extension of our mining arts. Each subsequent discovery is likely to give a temporary increase in the store of gold from the winning of the superficial gold-bearing detritus, followed, perhaps, by a long-continued production from the lode deposits. When this work of exploration is done and all the fields known, a continuous supply will depend on the complicated equations between advancing arts of applying power and the demand for the precious metal.

It does not seem possible that the metallurgical art, as applied to the winning of gold, can be carried much further than it is at present. Some diminution in the cost of production will doubtless occur from inventions and discoveries yet to be made, but the recent history of the arts involved in winning gold appears to indicate that we have attained very nearly to the ultimate point of economy in the treatment of auriferous ores. The recent discoveries in the application of electrical energy enables us to foresee that within a short time wind power, by the intervention of storage batteries, may enable us to work mines in situations where the difficulties of obtaining fuel are such that mining is now impossible; but this line of invention can only apply to certain small parts of the earth's surface which are destitute of fuel. The facts on which I have founded the above-noted statements lead me to the following conclusions: First, that gold is more likely to become an article of increased cost within the coming half century than any other metal. That is measured in the terms of day's labor, it is likely, each decade, to cost more than any other metal which is now the object of extensive search, except it may be tin. When once the alluvial deposits have been exhausted and the richer mines have been worked to the depth where the difficulties arising from internal heat and the incursion of water are considerable, the cost measured in terms of labor will rapidly increase. Individually, I am of the opinion that measured in terms of labor the gold won during the past decade has cost more than that produced in any of the preceding four decades of this century, though I have no great confidence in my judgment on this point.

DISTRIBUTION OF SILVER ORES.

Owing to the fact that it does not readily combine with other elements, gold, despite its weight, has been widely disseminated in the rocks. Silver being far more oxidizable, has a much more limited distribution over the surface of the earth. It is also less commonly found in profitable quantities, at least in original lodes, than in the case of gold. Thus, while the eastern part of the United States has probably produced in the aggregate more than $30,000,000 in gold, the total amount of silver which it has contributed to the markets of the world is certainly less than a million dollars. Owing to the readiness with which it is oxidized, silver is never found, at least in important quantities, in detrital deposits derived from the ablation of lodes containing that metal. The total area of the earth which has contributed gold to our markets is probably twice as great as that which afforded silver in commercial quantities.

During the past ten years no new and important sources of silver supply have been developed. Many new lodes have been discovered, but these have all been in fields where there had already been reason to suspect the existence of such deposits. On the other hand, silver-producing deposits appear to have a continuity not found in the case of gold-bearing veins. Thus there are many mines, as, for instance, those of Saxony, which have produced silver for several centuries and still maintain their supply.

In part the greater continuity in the production characteristic of silver mines as compared with those of gold may be accounted for by the fact that the ores of silver are generally associated with those of lead and copper, metals which are accumulated in deposits of considerable thickness and mass. Probably more than one-half of the silver production which has been contributed to the world's market during the last century has been afforded from mines where the metal has been found associated with lead or other substances, which have in part repaid the miner for his labor. This association of silver with other valuable materials, making it in some cases a by-product and in others a more important element in the result obtained by the miner's labor, tends, in a way which is readily understood, to increase the production of the substance and also to keep that production in a less variable position than in the case of gold.

The larger part of the gold now accessible to the miner is contained in gravels and must be won by sluicing or hydraulic mining. Experience in California and elsewhere shows that the processes of winning this alluvial gold leads to the destruction of the regimen of the rivers into which it is discharged, to the complete ruin of the area which is searched for the metal and also to the injury of a wide field of agricultural land in the regions adjacent to the streams into which the débris is discharged. It is not too much to say that each dollar of gold which is won by hydraulic processes, when they are carried on in a large manner, necessarily brings about several dollars' worth of damages to the interests of men in the time to come. So grievous has been this damage to the immediate interests of the agriculturists that in California it has appeared necessary to prevent hydraulic mining by legislative enactment. There are probably areas on the earth's surface containing deposits of alluvial gold where the hydraulic process may be carried on without the sacrifice of extensive tracts suited to agriculture, but they remain to be discovered. It seems to me that if the purchasing power of gold should be considerably enhanced by a diminution of the supply, this damage which comes from working alluvial deposits may become in time an important matter; at any rate, it deserves to be considered by economists.

By far the richest field in silver mines known in the world is included within the limits of the Cordilleran system, or great mountain chains which border the western shore of the American continents. The most important increments in silver production which have taken place in modern times have been due to the contributions from this field. First came the influx of silver from the Andean division of this system. This South American product in time diminished as the mines from which it came were worked out or carried to a depth where further production was made impossible by difficulties encountered in deep mining. For a considerable period the Mexican mines had an important share in the production of silver. They, too, gradually lost their importance. About thirty years ago, access to the portion of the Cordilleran range which lies within the United States led to a great increase in the supply of this metal. The largest production was from the Comstock lode, a deposit which now appears, despite the very costly explorations, to be essentially exhausted. Long continued and careful search of the Rocky Mountain district and of the region on the west of that field has revealed a number of important silver deposits, which have contributed largely to the world's supply.

So careful and thorough-going has been the search for silver ores in the section of the Cordilleras which lies within the United States that we may assume that we have discovered all the large deposits of this metal which lie within that field. Although many lodes of economic importance have there been found, it is important to know that in no case within the last ten years have very extensive or highly productive veins been discovered. There doubtless remain scores of these deposits sufficiently rich for working, but it is highly improbable that we have yet to discover any sources of supply to be compared in importance with those of the Comstock lode or of Leadville. The Rocky Mountain district, owing to the character of its surface, is peculiarly well fitted to favor the work of the prospector. The covering of soil is thin and thus the character of the bed rock and its mineral contents is readily revealed. In my judgment this district has no great surprise in the way of silver production to afford the world.

What we know of the distribution of silver in other countries leads me to the conclusion that no other field for the supply of this metal, comparable to that of the Cordilleras, awaits discovery. The Indo-European chain, extending from the Pyrenees to eastern Asia, evidently is not rich in silver ores. It is, indeed, the least metalliferous of our great mountain systems. There is no evident reason to look to the central parts of Asia for large silver supplies. Australia has not shown any signs of affording a large production of this metal. Africa, so far as known, does not promise to prove argentiferous, though we know as yet too little of the mineral resources to have a decided opinion on this point.

It is to the unexplored portions of North and South America that we turn for the most of our expectations as to the future increase in the production of silver. The eastern parts of these continents are not likely to yield large amounts of this metal, for the reason that despite the extensive search for mineral wealth to which they have been subjected, no important sources of supply of silver have been discovered. There are, however, considerable fields of the Cordilleran system which have not yet been explored by prospectors. In the United States, Mexico, Peru, and the greater part of Chili the search for these deposits has been long continued, careful and much favored by the character of the surface. We may, therefore, assume that in this section of the system, which includes nearly three-fourths of its area, there are few deposits of great importance which await discovery. The extreme southern portion of the system, that which lies in Southern Chili and Patagonia, is essentially unexplored. So, too, the section north of the United States is to a large extent unknown as regards its mineral resources. These two unexplored regions include perhaps one-fourth of the Cordilleran system. There are reasons, which I cannot here discuss, which lead us to the opinion that these unexplored fields are likely to show fewer important silver deposits than those areas in the Cordilleran field which have been the seat of mining industries; but even if we assume that equally large deposits exist in those regions, the total production which they may afford is not likely to be very great.

There is an important question concerning the future product of the Cordilleran silver-bearing fields in Mexico and South America to which we must now turn our attention. The mines which were worked in these countries in the three centuries preceding our own were generally abandoned on account of the depth to which their workings had penetrated. Modern speculators have assumed that the introduction of better mining machinery might again bring about a great production from these abandoned mines of Peru and of Mexico. Many experiments in reopening these ancient mines have proved unfortunate. The reasons for these misadventures are easily seen. While the modern machinery and methods of mine working have certain great economical advantages over the ancient processes, the cost of labor has so far increased with the development of civilization and of commerce in these regions that it more than offsets the advantages of improved mechanical appliances. These mines were in the main worked under a system of peonage or slavery, at a time in the world's history when the cost of labor in Europe, as compared with that in South America and Mexico, was greater than at present. Although the method of working followed in the Mexican and Peruvian mines was rude, it enabled the managers to win the richer portion of the lodes, leaving only the poorer for the modern explorer. Moreover, the physical difficulties attendant upon the reopening of ancient mines, difficulties arising from the bad condition of the worked ground, are often very serious. In my opinion, no great increase in the supply of silver is to be apprehended from the reworking of these abandoned mines.

There remains the question whether the incidental production of silver obtained from the working of lead, zinc, and copper ores is likely in the future to be an important element of supply. At present, as before remarked, the production of silver from mines in which the lead or other base metal is a large element of the profit is considerable. It seems likely that in the time to come the production of silver found in combination with other valuable metals will be more important that it is at present. At present, the lead produced in silver mining affords a large part of the return from the mines which produce the metal. So extensive is this contribution of lead from silver-bearing ores that a greater part of the mines of lead which do not produce at the same time a considerable amount of the more precious metal have been abandoned. In other words, lead is now mainly produced as a valuable by-product in the mining of silver. If lead should increase in price it would diminish the cost of producing silver.

It does not appear to me likely that the demand for lead will rapidly increase in the time to come. This metal, which was at one time extensively used for a great variety of purposes, is now in the main used for small projectiles and for making paint. Its use for pipes has gradually diminished; iron and other metals have taken its place. The diminution in the price of copper has also tended to displace it in the market. Moreover, the price of lead has of late been singularly steadfast, though the average market value exhibits a great diminution within twenty years. I am inclined to think that the consumption of this metal is likely to diminish rather than increase in the time to come, and that we may not look to any increase in the silver production dependent on an enhancement of the value of this associated metal. The silver obtained in copper mining is less considerable in quantity than that which is won from lead mines. Furthermore, where this metal is combined with copper in intimate mixture, as it generally is, separation is attended by peculiar difficulties, which make it unlikely that we shall see in the time to come any considerable increase of silver from this source of supply.

My survey of the silver problem from a geological and geographical point of view has led me to the conclusion that this metal is likely to be produced in rather less quantities during the remainder of this century than during the last twenty years, and furthermore, that in the nineteenth century, saving for unforeseeable improvements in mining and metallurgical processes, the production is likely to undergo a steadfast diminution. So far as a decrease in the purchasing value of this metal depends upon an increase in the quantity produced, it appears to me that we may dismiss our anxieties. A greater portion of the lands which are likely to yield silver in large quantities have been explored. Within ten years, despite the wonderfully active search for precious metals, no very important sources of supply have been discovered. Although the production of the Rocky Mountain districts may be somewhat increased by the work of numerous small mines, it seems more likely that at the present price of silver the product of that region will remain steadfast or be subject to a gradual diminution.

On the other hand, in the case of gold, we are clearly liable to many sudden increments in the production, followed by periods of diminished supply. If the only problems before the students of the questions connected with currency were those of a geological nature, the preference as a measurer of values must, in my opinion, undoubtedly be given to silver, for the reason that not only has the supply of that metal been more constant in the past than that of gold, but for the reason that in the future the yield promises to be less subject to sudden variation than in the case of the more precious metal.

N. S. Shaler.
Geologist U. S. Geological Survey.

Edward Atkinson, Esq.,
United States Commissioner, &c., &c.

LETTER FROM JAMES D. HAGUE, ESQ. (AUTHOR OF MINING INDUSTRY, VOL. 3, U. S. EXPLORATION OF THE 40TH PARALLEL).

New York, *October* 27, 1887.

Dear Sir: I have the honor to acknowledge the receipt of your letter asking my views upon the present and prospective product of silver in ratio to gold. Other engagements have prevented an earlier reply, and I regret to say that, as I am about to leave for California, my time is now so fully occupied that I am unable to give to your inquiry the carefully studied consideration it deserves. I can, under these circumstances, only say, very briefly, that, so far as my general knowledge of current mining operations in the West enables me to judge, there is no visible indication of a largely increased production of silver in this country in the near future. On the contrary, at the present market price, I think the silver product is more likely to diminish than to increase. Chances which no one can foresee may at any time lead to the discovery of new and very productive silver mines; and if the price of silver should by any means be advanced to the old standard value, it would doubtless result in reviving many small mines which are now idle because they can only lose money under existing conditions while they might realize some profit in producing and marketing silver at $1.29 per ounce; but, giving these possibilities all due consideration, I think the probabilities are in favor of a somewhat diminished rather than a largely increased output of silver during the next few years. Taking a general view of the gold mining industry of this country it seems to me to have increased in activity during late years, and some moderate gains in the annual product of that metal may reasonably be expected.

Very truly yours,

JAMES D. HAGUE.

EDWARD ATKINSON, Esq.,
Boston, Mass.

LETTER FROM PROF. ROBT. H. RICHARDS.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
Boston, October 29, 1887.

MY DEAR SIR: Your favor of October 16 was duly received, and in answer to your question as to "what my views may be upon the present and prospective production of silver relatively to gold," I will say: The production of silver in the United States seems to have been increasing prettily steadily up to date. In 1870 it was about $17,000,000, and in 1885 $51,000,000 per annum, while gold seems to have reached its maximum in 1852, with $60,000,000 in that year, and to have then fallen gradually to $41,000,000 in 1878. It then dropped suddenly to $32,000,000, this falling off being due to the stopping of the hydraulicking in California and to the working out of the great ore body in the Consolidated Virginia property. Since 1879 the gold production has remained about constant, varying between $31,000,000 and $32,000,000 per annum.

The history of all silver-rich countries, when mining was in its primitive condition, goes to show that they have passed through successive stages. First, a period of discovery, followed by great mining activity; secondly, a period of working out the mines, and gradual falling off of production and finally of closing up the mines.

There seems to me to be no good reason why the United States should not follow the above rule, except for the age of advancement in which we live. We seem to be reaching our climax in silver activity at a period which is coincident with a period of great activity in discovery and invention.

Our great finds of ore bodies have probably been mostly made, and we are now in our period of great mining activity, but the period of falling off and decline will probably be much longer postponed here than it has been in other countries, because of the development of the science of mining, enabling us to work much deeper into the ground, and to work much closer in our processes.

Take for example the great Comstock lode. Before 1879 it went through a period of almost unparalleled production. Then came a period of falling off; no more rich ore bodies were found to take the place of those which were worked out. The closing up of the mines was imminent. But quite recently the art of concentrating Comstock ores has been perfected and now the mines are entering upon a new lease of life. The ore bodies that were not rich enough to be worked in the bonanza days are now being mined and concentrated. This discovery will postpone indefinitely the closing of the mines. They will probably continue for a good many years to produce silver at a profit.

Leadville has had its boom and depression and has now settled down to steady production for a number of years to come of low grade ores, which are nevertheless worked at a profit.

Central City and Georgetown, Colo., and many other places have been through similar periods and are in the steady business stage now.

It seems necessary to interpolate in the consideration of the United States, therefore, after the period of discovery and great profits and before the period of closing up, another period, namely, that of close business management and of careful scientific mining, milling, and smelting.

In the United States there have been no startling discoveries of silver for a number of years; no Comstock, no Leadville, no Hornsilver, no Ontario, no Butte; and yet the production of silver has gone on increasing steadily. I think this must be due to increased perfection in appliances, enabling us to go deeper and work closer. As to how long this increase can go on, and after it has ceased how soon a fall of any considerable magnitude will follow, could, I think, be better estimated by some of the officers of the U. S. Geological Survey, of the Census of 1880, or of the United States Mint.

Now as to the relative advance in silver and gold. Silver is evidently still increasing with its $51,000,000 production in 1885, and gold is about holding its own at $31,800,000 in 1885. But the gold quartz mines while they are generally in the same condition as the silver mines, namely, in the period of careful business management and scientific milling, they, however, differ from them in this respect, that the gold mines appear to hold their riches to a greater depth than the silver mines, and hence the former will probably last longer than the latter. And again, there are large areas of ground in California available for drift mining for gold which are as yet untouched.

On these accounts I am led to the opinion that the period of decline in the production of gold is more distant than that of silver.

Respectfully yours,

ROBERT H. RICHARDS, B. S.,
Professor of Mining and Metallurgy.

EDWARD ATKINSON, Esq.

LETTER FROM ROSSITER W. RAYMOND, PH. D., SECRETARY OF THE AMERICAN INSTITUTE OF MINING ENGINEERS.

NEW YORK CITY, *October* 21, 1887.

DEAR SIR: In reply to yours of October 14, relative to the present and prospective production of silver, I can only say that in my opinion a rise in the price of silver would be followed by an increase of the present production; for I know of large quantities of low-grade silver-ore which are constantly seeking a sale at the smelting works, but in vain, because the price of silver now leaves no margin to the owners of the ore after smelting charges have been deducted. I can not, however, estimate the extent of the increase, nor can I say how long it would continue. The extent of our undeveloped resources is, of course, unknown. Still, I will frankly say that in my opinion it is large, and that the restoration of the former gold value of silver would affect a great quantity of ores for many years to come.

I am not a bimetallist, as that term is commonly applied. If the United States is going to continue coining legal-tender silver money, I think it should make the dollar heavier. I also think that this would make the dollar a bigger nuisance than it is now. Consequently, I would prefer a limited legal-tender quality for silver, and a gold standard.

Unfortunately I am too greatly pressed with other (and imperative) work to accept your kind invitation to give you my views at length, as I should be otherwise glad to do.

As to the future price of silver, I think it is "down to stay," and we shall not see it again where it was before, in your lifetime or mine. I do not mean that it may not rise somewhat above the exceedingly low price of to-day.

Yours, truly,

R. W. RAYMOND.

EDWARD ATKINSON, Esq.,
Boston, Mass.

LETTER FROM J. S. NEWBERRY.

SCHOOL OF MINES, COLUMBIA COLLEGE,
New York, November 9, 1887.

DEAR SIR: In compliance with your request I send you herewith a brief statement of my views in regard to the probable future of gold and silver.

GOLD.

I have been for many years more or less occupied in studying the production of gold and silver throughout the world, and have myself visited all the important mining centers within our own territory. I began my observations in 1855 in the gold-bearing districts of California during the period of the greatest productiveness of our placer deposits. Since then I have spent a part of nearly every summer among the mines of the West, and have just now returned from the last of these trips through some of the newer mining camps of Colorado. The result of this experience has been to convince me that our production of both gold and silver has passed its maximum, and that in the future we can not expect a yield of more than perhaps one-half the greatest annual product of gold.

Probably nine-tenths of all the gold obtained by man has been taken from placer deposits, and American experience has been no exception to the general rule. Previous to 1847 our total gold production amounted to $12,000,000; but between 1847 and 1887 about $1,750,000,000 have been contributed to our stock of gold. Of this fully three-fourths came from placer deposits. In 1850–1856 we obtained more than $50,000,000 per annum in gold from our placers and almost nothing from gold bearing veins. Now, with an annual production of $30,000,000, about one-half is from placers. Our own territory has been so thoroughly explored that no considerable superficial deposits of gold are likely to be discovered; and nearly the same thing can be said of the entire world.

In the northern extension of our Western mountain ranges, in British Columbia, and Alaska, there are probably important deposits of gold. These mountains are everywhere auriferous within our territory. In Alaska gold mines are successfully worked in a few localities; gold is reported from many others. Dr. George M. Dawson has also found indications of gold for 500 miles along the mountains north of Frazer's River. Hence we may hope that a considerable contribution may be made by Northwestern America to the gold product of the world. It is likely, however, to come from this region in a moderate but perhaps perennial stream, and not in a flood. Great difficulties will attend the working of mines and especially placer deposits in the mountains of Canada and Alaska. The winter is long and terribly severe and the snowfall heavy, limiting active operations to three or four months in the year; the surface is very much broken, entirely unproductive, covered with a dense forest, and peopled by unfriendly Indians. All supplies must be imported by long, rough, and expensive routes. These difficulties will restrict the production of gold to such a degree that unless the mines and placers should prove to be rich beyond all present indications, the gold product of this region must have a good and not a bad influence on the finances of the world.

Eastern North America contains in the Alleghany belt a vast quantity of gold, but this is generally in the form of low grade pyritous ores, difficult to treat. With skill, energy, and economy they may, however, be worked at a profit, and we may look upon them as offering a handsome reward for the exercise of these cardinal business virtues and as promising to supply a not strong but steady stream of this financial vital fluid.

Mexico has no important deposits of gold. For three hundred years her territory has been explored and her mines worked by an industrious and avid race of miners who would certainly have discovered and unearthed any considerable golden treasure. In a few localities gold veins and surface deposits are worked, but the relative quantity of this metal is everywhere small, and the rain-fall has been in the past too slight to furnish the motive power for extensive erosion, as it is at present insufficient to supply the needed water for successful gold washing. When no revolutions have interfered with the production of precious metals in that country, Mexico has steadily yielded about $1,000,000 per annum in gold. This contribution may be kept up for years, but can hardly be exceeded.

The western coast of South America, so rich in silver, is, like Mexico, poor in gold. The superficial deposits which formerly existed there were diligently worked and practically exhausted by the icarial population. We learn from the Spanish chronicles that a very large sum was realized by the invaders from the golden decorations of the Temple of the Sun at Cozco, and that many of the vessels with which the prison chamber of the unfortunate Atahualpa was filled were composed of gold; but since that time the gold product of the whole coast from Ecuador to Chili has been insignificant. The mines which subsequently poured hundreds and even thousands of millions into the Spanish treasury yielded only silver.

Colombia, Venezuela, and Brazil have, on the contrary, always been producers of gold. It is estimated that from Brazil alone more than $1,000,000,000 in gold were obtained during the first two hundred years after the advent of the Portuguese. Colombia and Venezuela are now yielding about $4,000,000 each, annually, but the great Callao mine, which furnished one-third of this sum, has of late greatly fallen off in its productiveness. The superficial gold mines of this portion of South America were diligently worked by the ancient inhabitants, and they probably secured the greater part of the gold they contained. The gold images which they buried with their dead are now sought by a special class of miners, if such they may be called, who exploit the old cemeteries with considerable success, and gold washing is carried on in many localities; but these gold fields are no longer virgin ground, and we can not expect them in the future to yield more gold than they do at present.

The gold production of Australia has been but little inferior to that of our own country. At first it was exclusively from the placer deposits, and when the richest of these were worked out the yield was greatly reduced. It has, however, been revived by the development of reef-mining and the annual yield from both sources is now about $30,000,000. We may hope, too, that the present rate of production will be maintained or approached for many years to come.

The great Asiatic continent once had its famous gold mines like America and Australia, but it has been so long occupied by a dense human population that its stores of gold have apparently for the most part been exhausted. The Chinese, the Hindoos, the Tartars, and their ancestors, who so long occupied the interior of Asia, have all been diligent gold hunters, and they have left no stone unturned beneath which this, the first found and most highly prized of metals, could be concealed. From the continent of Asia and its dependencies we can, then, expect little more than the present modest contribution, which may reach four or five millions of dollars per annum.

The gold product of Europe is now perhaps $30,000,000 a year; of this nearly all or about $25,000,000 comes from the Ural Mountains. The gold mines here came under the control of the Government in 1820, since when a steady stream, an average of over $20,000,000 per annum, has flowed from them into the treasuries of the world. How long this contribution may continue we can not say, but it is scarcely likely to change much for some years to come.

It is possible that important discoveries of gold may be made in as yet unknown veins and placers in Africa, but the latter is improbable. The placers of Ethiopia, as we learn from the Egyptian records, were worked as early as sixteen hundred years before Christ, and we have reason to believe that the surface deposits of that continent, as well as those of Asia, were mostly exhausted before the Christian era. The working of mineral veins has hardly been attempted by the barbarous native population of Africa, and it is quite possible that stores of gold deeply buried in the earth, beyond the reach of savages, but destined to be exploited with the advance of civilization, will form an important factor in the future history of gold. The "golden sands" which have become inseparably connected with our ideas of "the dark continent" must lead up to sources in gold-bearing veins which in the future and for centuries may help to keep up the world's needed supply of gold.

With these facts in view we need not expect any other such floods of gold as those that inundated the markets of the world from the placers of California, Australia, and New Zealand, but the present yield of about $100,000,000 is likely to be maintained for some years. Individual mines have but a limited term of service, and it is not likely that many gold mines like the Comstock and the Callao remain to be discovered. Hence, placers and great mines are not likely to be disturbing elements in the gold market, but the more thorough examination of the different countries will bring to light more productive ground; railroads and other channels of travel and traffic, and improved processes for treating refractory and low grade ores, will bring within reach and render productive thousands of minor gold deposits which will go to maintain the aggregate production. The world's stock of gold will gradually decline from the diminished supply, the increased consumption in the arts, the abrasion of coin, etc., but this change must take place slowly, and inventions like that of Cowles' electric process in metallurgy may give us substitutes for gold of equal value in the arts.

SILVER.

The problems of the future in silver production seem all to lie within our own country. The great silver belt of the world crosses our territory from British Columbia to Mexico and stretches thence southward to Chili. It is interrupted only at the Isthmus, where it is submerged. From this belt more than $6,000,000,000 have been taken since the discovery of America, and here we must look for the signs of promise in the future production of silver. As I have before said, within our territory the silver product is not likely to increase, but is almost certain to decline, though perhaps slowly, and we may expect our mines to yield $40,000,000 to $45,000,000 per annum for many years to come.

Mexico has continued for half a century to produce annually about $25,000,000 in silver to $1,000,000 in gold. There are no indications that this state of things will soon change. It has been predicted that with the introduction of foreign capital and improved machinery the production of the Mexican mines would be greatly increased, but the experience of the last five years has not confirmed such predictions. The Mexicans are experienced miners, skilled in producing great results by simple means, are frugal, industrious, and peaceful, and it is very doubtful whether the extravagant, impatient, and speculative Yankee, with all his improved methods and machinery, will often succeed, where the patient, close-working, and economical Mexican has failed. No one knows a good thing when he sees it better than a Mexican miner and none is less likely to relax his hold when once he has his grip upon it. I think it will be rarely found that a mine abandoned by the Mexicans is worth working, and

I am quite sure that we are not to have any considerable increase in the silver product of Mexico.

The silver mines of Peru and Bolivia (Cerro de Pasco and Potosi) are the most famous in the world. No one knows exactly how much silver was taken out of them, but Chevalier estimates it at $2,493,426,880. They have produced comparatively little for many years, but it has been generally believed that when the railroads, commenced by Henry Meigs, should be carried into the countries where the mines are situated, and modern skill, capital, and machinery be brought to bear upon them, they would still yield incalculable sums. All this is, however, a figment of the imagination. Recent thorough explorations of these mines by American experts, continued through two years and aided by the diamond drill, have failed to discover any bonanzas in either of these mines. Low-grade ore there is in plenty and that which may perhaps be worked with a small margin of profit, but as disturbers of the public peace in the financial world the South American silver mines need not be feared. In the last report of the director of the mint the yield of the silver mines of Bolivia is estimated at $16,000,000 per annum, but I am led to believe that it is much less, probably not half of this amount. Chili is now producing about $6,000,000 in silver per annum and it is scarcely probable that this sum will ever be greatly exceeded. The mines of Copiapo have certainly seen their best days, and those of Caracoles, more lately discovered, will never rival these in productiveness.

The silver production of America is about three-fourths of that of the whole world, and the sources of silver elsewhere are so widely scattered and individually so unimportant that they can have little bearing on the future history of this metal. From America then, if from anywhere, must come the overwhelming floods of silver, which in the minds of some persons threaten disturbance and disaster in the financial world. After a careful survey of the field, however, I see no indications of any future glut in the silver market. The mines of Mexico and South America for three hundred years have been worked by those who possessed skill, energy, and economy, and they have taken from them year by year all they were capable of yielding. Whoever comes after them will find that they have skimmed the cream of all the known ore deposits, and have been so thorough in their explorations that there is little chance of the discovery of others from which sums can be realized which can disturb the money market.

It should be remembered that these countries are easy of exploration, are mostly without timber, and are traversed by mountain ranges, of which the details of structure are everywhere visible. I think then that I am quite safe in saying that no danger of financial disturbance need be apprehended from the silver mines of Mexico or South America.

Whichever way we look, therefore, we fail to perceive any indication of storms in the business world such as might be occasioned by great changes in the production of either of the precious metals; certainly no threatenings of a sudden or serious increase in the annual production of either. On the contrary, a different and much more formidable danger is to be feared, viz, a gradual exhaustion of our mines and the diminution of the stock of gold and silver now on hand below the point where they best serve the world's purposes. Indestructible, uncreatable, readily divisible, easily coined, widely distributed, but nowhere abundant, they have been proved by long experience unique in their adaptation to the wants of society as representatives of value and circulating media. They are equally necessary and both indispensable to the safe and easy transactions of the commerce of the world. It would be a great misfortune, therefore, if either should be produced in such redundance or deficiency as to seriously disturb the relations which they have sustained to each other and to man's daily labor, which is the real unit of value.

I am happy to assure you that with my lights I can perceive no indications that either of these dangers is imminent.

J. S. NEWBERRY.

MR. EDWARD ATKINSON.

LETTER FROM RAPHAEL PUMPELLY.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
Newport, R. I., November 16, 1887.

MY DEAR SIR: On returning from a journey I find your note of the 4th inst., saying that any communication must be sent you within a week. On the whole it does not make much difference as regards me, for on thinking it over I find that my facts are few, so I should not attempt even with time to write anything.

I will give you here my crude impressions. It seems probable that the product of silver will on the whole continue to increase with fluctuations; the discovery of new mines compensating for the exhaustion of old ones, while the growth of economy in mining and reducing and the diminution of the amount wasted in tailings and slag will give an increase. But a greater gain must come from improvements that will render workable the large bodies of ores that are of too low a grade to work profitably at present.

From time to time there will doubtless occur, as in the past, discoveries of great bodies of rich ores which will temporarily swell the products. This can hardly fail to occur with the advance of means of transportation into the cordilleras. But it seems to me that these same remarks apply to gold as well as to silver. Here, too, there will be an increase through the opening of new mines and economies in working ores and preventing loss.

With regard to great discoveries it would seem that they are even more likely in regard to gold than to silver. The great silver fields of the world have been in the cordilleras of the two Americas. But the gold fields exist in the Americas, Australia, Asia, and Africa. And there is this to be considered in regard to the future of gold—that, while in the past the product has been practically wholly from ores carrying only free gold, processes will undoubtedly be perfected that will open to profitable working the large quantities of ores carrying gold in sulphurets and arseniurets, etc.

I am inclined to believe that gold is more widely distributed than silver. As far as our present information extends, it would seem to be much more abundant in solution in the water of the ocean than silver; for Sonstadt finds 1 grain gold in 1 ton sea water, while Malaguti and Durocher found only 1 centigram silver in 1,000 kilograms of sea water.

I see no reason to suppose that the cost of producing silver will be capable of any great reduction.

Very truly, yours,

RAPHAEL PUMPELLY.

EDWARD ATKINSON, Esq.,
Boston, Mass.

NOTES ON THE RELATIVE PRODUCTION AND RELATIVE VALUE OF THE PRECIOUS METALS BY GEORGE F. BECKER, UNITED STATES GEOLOGIST.

Resources of the United States.—No one can doubt that the mining regions of the Rocky Mountains and of the Pacific slope are far from being exhausted; but even a vague idea of the prospective yield of the precious metals in the United States can hardly be obtained without considering the nature of the distribution of the ores. It has long been known that a great part of the deposits of the Pacific slope are grouped in belts or zones, nearly parallel to the mountain ranges of the region.* The precious-metal belts of the slope are reducible to three, viz, the gold belt of California, the silver belt of Arizona, which is prolonged northward into Nevada, and the lead-silver belt of Utah, lying at the western base of the Wahsatch range. It has been shown within a few years that these belts coincide with zones in which profound disturbances have taken place in past time. It is along these lines that the great upheavals in the geological history of the region have occurred, transforming oceans into continental areas and burying vast tracts of land beneath the sea. The coincidence of these lines of disturbance with the ore belts clearly indicates a direct connection between the dislocations and the genesis of ore, and points to the conclusion that along the extensive unexplored or partially explored portions of the zones of disturbance ore deposits are probably to be found.

Not all the deposits of the Pacific slope occur on these belts, but, so far as is known, all of them are accompanied by evidences of violent dynamical action. This is also true of the less sharply defined metal-bearing region of the Rocky Mountains, which also stretches in a northerly and southerly direction.

As may readily be inferred from these statements, there are a vast number of localities in the western United States in which the geological conditions appropriate to the occurrence of ore seem to prevail, but in which ore has not as yet been discovered. It is true that a great number of prospectors have traversed the country in all directions; but it by no means follows that, because much prospecting has been done, all the important deposits have been detected. Not only prospecting but mining was carried on close to the Comstock lode and close to Leadville for a considerable time before the existence of those great deposits were suspected, and prospectors had been at work for months close to the deposit of the Horn Silver mine before an accident revealed its unsuspected existence. Many other deposits have almost escaped detection, and a much more intelligent and thorough exploration of the country than any which has hitherto been made must precede the development of its full resources.

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* This was first pointed out by Prof. W. P. Blake in 1866. Mr. Clarence King further developed the idea in 1870. See Amer. Jour. of Science, vol. 28, 1884, page 209.

The course of discovery will no doubt be checkered. That there will be periods at which the known ore bodies will be few is pretty certain, and that deposits of startling richness will be encountered is almost equally certain. The Comstock lode was considered nearly worthless property just before the discovery in the Consolidated Virginia and adjoining mines of the great ore body, which alone has yielded some $120,000,000 worth of silver and gold. The incident was typical, and the same sort of thing has happened at short intervals throughout the history of deep precious-metal mining.

Probabilities as to relative production of gold and silver.—Since the discovery of gold in California the weight of the silver extracted in this country has been about seven times that of the gold. It is practically certain, however, that in future the relation will be a very different one. From the discovery of gold in California up to the close of 1860 the silver product was very small, while the gold product averaged $50,000,000 a year. This gold came chiefly from the auriferous gravels of California, which had been accumulating for many hundred thousand years. Corresponding accumulations of argentiferous gravels are not found in nature, although the croppings of silver veins, like those of gold, are converted into detritus. Silver ores are for the most part brittle and easily reduced to powder; they are only moderately heavy, and are without much difficulty converted into a soluble double chloride. Consequently, when the croppings of silver veins are worn away by the weather or by running water, they rarely yield argentiferous gravels of any value. Gold, on the other hand, is tough, heavy, and chemically indifferent. Hence the gold derived from the erosion of veins accumulates in gravel deposits, while most of the silver is carried away. In a new mining country, therefore, there is a surface accumulation of easily accessible gold but no such store of silver, and the early precious-metal product of such a country will include a proportion of gold far in excess of that in its subsequent yield.

The richest auriferous gravels in the United States have been exhausted. Vast quantities of poorer gravels remain in California and Idaho which could be profitably mined by the hydraulic process, but the prosecution of this industry in California has for the most part been forbidden by law. By no means all the gold of the country, however, comes from gravels. Even during the census year, when the hydraulic mines were in full operation, nearly twice as much gold was produced from deep mines as from placers. A very large part of the gold extracted also comes from mines commonly regarded as silver mines. Even the Comstock lode, the enormous silver product of which gave great uneasiness, has yielded a very large quantity of gold, estimated to amount to no less than $130,000,000, or over 40 per cent. of the value of the total yield of the lode up to June 30, 1880. In the Austin district the silver carries no appreciable amount of gold, but the gold in the ores of Eureka is worth at mint rate about half as much as the silver. At Leadville the gold produced is insignificant, and even this is not derived mainly from the great lead deposits but from auriferous ores obtained in the surrounding country.*

In 1883 the United States produced by weight 24.6 times as much silver as gold. In 1884 the same ratio rose to 25.3, and in 1885 it reached 26.† The production of each of these metals has been increased during these years, as well as the ratio of the weight of silver to that of gold. It is of course improbable that this ratio will rise indefinitely or even regularly. Some idea of its ultimate mean value may perhaps be obtained from that of the entire product of North and South America since their discovery. I have calculated this ratio for the two continents from 1493 to 1875, from data given by Dr. Soetbeer, and find it 29.1. It appeared best not to include the last ten years because of the depressing influence which the discount on silver exerts upon the mining of that metal. There seems no good reason to suppose that the average proportions of gold and silver in the unmined deposits of the western United States are likely to differ greatly from those in the average deposits hitherto worked in this hemisphere. If any variation is found, the future ratio will probably exceed 29.1 if the price of silver sinks no further, because this number is derived from data which include very large quantities of placer gold, certainly over 3,000,000 kilograms, while in the future product of the United States placer gold will be a less and less important item. The ratio of the weights of the two metals for the whole world from 1493 to 1850, or up to the time when the gold of California and Australia began to affect the proportion sensibly, was 31.5. The placer deposits of Europe were of course worked for many centuries before the discovery of America, and the high ratio for this period is no doubt due to that cause.

The effect of the price of silver on the production.—The average cost to the producers of extracting gold and silver is probably from 90 to 95 per cent. of the spot value; for while many establishments work at a great profit, others are doing dead work, or are working at a loss from lack of skill or judgment. There can be no doubt whatever that very many mines in the West are working on a narrow margin and that any considerable further discount on silver, under the present economical conditions, would result in closing them. It is well known that because of the depreciation of silver, not a few mines are already shut down, which at the old value, $1.2929 per ounce, would yield a good profit. It is, therefore, very absurd to suppose that this country can yield an indefinitely large product at the present price of silver, or at a lower one.

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* S. F. Emmons, Geology of Leadville, page 545.

† These ratios are computed from the products as given by Dr. J. P. Kimball in his Report upon the Production of Precious Metals for 1886, p. 133.

On the other hand, the statistics show a slow but steady rise in the production of silver in spite of the progressive decline of price. This is in part due to new discoveries, but, in my opinion, much more to the increased facilities for transportation, and the consequent cheapening of supplies in the mining districts. Railroads are now penetrating the far West in every direction and the emigration to the Pacific coast is so large that the price of labor must inevitably sink far below the old standard of $4 a day. When means of transportation and labor become abundant, very many deposits which have long been known, but which were difficult of access and could not be worked at a profit under the conditions which formerly prevailed, will be worked either at the present or at a somewhat lower price for silver. Improvements in processes of extraction will of course be made, but so large a proportion of the cost of extracting silver now consists in the expense of mining and of handling the ore, bullion, and waste products, that no probable improvement in metallurgical processes will greatly diminish the cost of products.

On the whole, I am unable to see grounds for supposing that there is any impending dearth of silver-bearing deposits. At present prices the yield seems to me likely to increase much as it has done during the past years, or possibly somewhat more slowly. Lower prices will unquestionably check the increase, and if the price sinks sufficiently it will inevitably result in a diminution of the product; but it hardly seems possible that any one should be able to say how great a diminution in price would preclude an increase in the production.

Future of production in foreign countries.—The silver question is of course not dependent upon the United States alone. Mexico and South America together have produced in past times vastly more silver than this country, and their present output still notably exceeds our own. Like our own, too, it appears to be on the increase in spite of the discount on silver; and the development of means of transportation is increasing to the south of us as well as within our borders. Indeed, the entire silver product of the world shows a marked upward tendency, while the gold product has been until lately diminishing, though a considerable increase has taken place since 1882. It is by no means certain that the gold product of the world will again fall off. The hydraulic gravels of South America have only lately been taken in hand, and nothing is more probable than that they will immensely increase the world's gold product. There can be no doubt also that the gold product of South Africa will increase.

Judging of the precious metal resources of the world from the recorded yield of the mines for about four hundred years, it seems probable that, as the more easily worked placers become less fruitful, the ratio of the silver product to the gold product, by weight, will tend to some value not far from 30. There is, in my opinion, good reason to believe that this product ratio was very much lower in Europe during ancient times and the Middle Ages, as well as in Asia in modern times. Gold occurs to a large extent in the native state, and no knowledge of metallurgy is necessary to its extraction. Silver, on the other hand, occurs only to a small extent in the native state, and a vast proportion of this metal is found in mineral combinations which were practically intractible by the methods known to the ancients. Two great American inventions changed the whole character of the industry and far more than doubled the available silver resources of the world. One of these was the amalgamation process, invented by Medina, a Mexican, in 1557. This was complemented, in 1633, by the invention of the first efficient furnace for the reduction of quicksilver. The inventor was L. S. Barba, a Peruvian, and his apparatus is known as the aludel furnace. It is worth while to note that both in ancient Rome and in modern Asia silver was worth much more in gold than it has been in Europe since the process of amalgamating silver ores was discovered.

Relations of the demand for coin to the product.—The general question of the relations between the supply of precious metals and the prices of commodities is evidently one of the most complex in political economy, for the opinions of financial experts differ radically respecting almost every feature of the problem. I should not think of offering any opinion upon it as a whole. The question whether or not there is a scarcity of gold is more limited and simpler. While eminent authorities have maintained that there is a dearth of this metal, Mr. J. L. Laughlin* shows that the gold reserves in the principal banks of Europe and America were not only much larger in 1885 than from 1870–'74, but also that they bore a much larger proportion to the total note circulation. He also points out that extraordinarily high rates of discount, supposed to indicate dearth of gold, prevailed much more frequently from 1855 to 1873 than since 1873. Dr. Soetbeer* has given the results of an investigation on the distribution of the gold product in a tabular form, of which the following is an abstract:

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*Quarterly Journal of Economics, vol. 1, p. 345.

Estimated changes in the monetary stock of gold in civilized countries 1851-'85.

Periods.	Gold products.	Non-monetary consumption.	Addition to gold coinage and reserves.	Estimated stock of gold coin and gold reserves at end of period.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*
1850				1, 200, 000
1851-'60	2, 006, 000	385, 000	1, 621, 000	2, 821, 000
1861-'70	1, 900, 000	877, 000	1, 023, 000	3, 844, 000
1871-'80	1, 732, 000	958, 000	774, 000	4, 618, 000
1881-'85	746, 000	574, 000	172, 000	4, 790, 000

If one compares the third column with the first, it is easy to compute the proportion of the gold product which has been added to the available stock of gold coin in each period. It then appears that for these periods, beginning with 1851-'60, the proportions of the gold product added to the available stock of coin have been, in round numbers, 81 per cent., 54 per cent., 45 per cent., and 23 per cent. Now, if there has really been a scarcity of gold of late, why was only 23 per cent. of the gold product added to the available coin of the world during the period 1881-'85? The contrast offered by these figures can also be brought out in another way. In the period 1881-'85 the gold product was 37 per cent. of the product in the ten years 1851-'60; but the gold coin added to the available stock in the five years 1881-'85 was only 11 per cent. of that similarly added in 1851-'60. Thus the additions to the available coin have diminished more than three times as rapidly as has the product. It might possibly be objected that Dr. Soetbeer's figures are not accurate, and indeed he claims only approximate accuracy for them; but the work done by this statistician is far too good to warrant the assumption that any corrections would reverse these striking results. They, with those obtained by Mr. Laughlin, seem to me to show incontrovertibly that the supply of gold is in excess of the demand for coin. It would be in vain to attempt to maintain that the non-monetary uses of gold have become so urgent as to absorb an increasing proportion of the gold product in spite of an active demand for the metal in the shape of coin, for, were this true, it is evident that in no long period such uses would absorb the entire quantity of gold in existence.

Dr. Soetbeer feels himself unable to offer a similar table for silver; but, since the silver product has of late years rapidly increased, and in 1885 was about double the average product from 1866 to 1875, it seems very certain that it too is produced in excess of the demand for coinage. This is also inferable from the tables of coinage, for while much silver coin in withdrawn from the available stock by exportation into central Asia and much is also melted down for industrial purposes, it is clear that no silver not coined can possibly be added to the available stock of coin. Dr. Kimball† gives data for the world's product and the world's coinage of silver, which it is worth while to place in conjunction.

[Silver at $1.2929.]

	1883.	1884.	1885.
World's product	$114, 128, 907	$115, 899 567	$124, 422, 342
World's coinage	109, 306, 705	90, 039, 443	97, 341, 019
Excess of products	4, 822, 202	25, 860, 124	27, 081, 323

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* Materialien, 2d ed., p. 47.

† Production of the Precious Metals, 1886, pp. 133 and 319.

It thus seems to be clear that during the past years the product of both the precious metals has been far in excess of the increase in the volume of gold and silver currency demanded by commerce. This certainly does not seem an unnatural result if one compares the average products of these metals for different periods. For this purpose I select the periods 1851–1885 and 1801–1850, adding also 1493–1850. The data for the computation are taken from Soetbeer, excepting those for the years 1883–1885, which have been last revised by Kimball.

Total products and mean annual products.

	1851–1885.	1801–1850.	1493–1850.
	Kilograms.	*Kilograms.*	*Kilograms.*
Total product, gold	6, 402, 243	1, 184, 870	4, 752, 070
Annual product, gold	182, 921	23, 697	13, 274
Total product, silver	57, 145, 444	32, 723, 450	149, 826, 700
Annual product, silver	1, 632, 727	654, 469	418, 510

Prior to 1851 precious metals enough for the purposes of trade were coined, and a large volume was also lost to Europe and America in central Asia, or was industrially consumed. Since that period there has been an immense increase in the amount of business done, but the annual gold product is seven and one-half times what it was during the first half of the century, and the annual silver product is two and one-half times as great as it then was. The volume of commercial transactions has, of course, increased enormously in forty years, but balances only are settled by coin, and I can see no reason to believe that the requisite yearly addition to the coin supply has increased in a proportion so great as the precious metal product.

Relative prices and relative product.—It seems probable from the above that the available quantity of the precious metals up to some epoch subsequent to 1850 was no more than sufficient to satisfy the urgent demand upon it, while in later years one or both of the precious metals have been produced in greater quantities than were necessary to satisfy the pre-existing demand. The question therefore suggests itself whether the price of silver in terms of gold may not have been determined by distinct causes in the two periods.

Gold and silver are so similar in their physical properties that they are used for almost exactly the same purposes, and in nearly all cases one could be substituted for the other without any detriment to the end in view. If zinc and tin were as similar as gold and silver, it is at least natural to suppose that the rarer of the two would command a higher price than that which was more common, and that the prices of the two would tend to be inversely proportional to the quantities produced, so that if the zinc product were eight times as heavy as that of tin, a pound of tin would be worth eight times as much as a pound of zinc. As a matter of fact much less tin than zinc is produced, and the price of tin greatly exceeds that of zinc, but as these two metals can be substituted for one another only in certain cases, the relative price differs considerably from the relative product.

Through the compilations of Dr. Soetbeer it becomes easy to examine the relative price and relative product of the precious metals, though neither he nor, so far I know, any other writer has compared these two ratios or presented any table of the relative products at different periods.* The following table shows the periods for which I have computed the ratio between the silver product and the gold product, and the periods for which the average prices of silver in gold have been calculated. The estimates of production from which the product ratios have been calculated are those given by Dr. Soetbeer,† excepting 1883–1885, which are those of the Director of the Mint.‡ The relative values of the metals, or the number of pounds of silver which a pound of gold will buy, are recorded by Dr. Soetbeer § from 1493 to 1875. The later figures are from Dr. Kimball's report.

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* The time allowed me for the preparation of these notes is insufficient to make a search through economic literature sufficiently thorough to justify an absolute assertion on this point.

† Materialien, etc., p. 1. Dr. Kimball's figures for 1883–1885 are given in his Report on the Production of the Precious Metals, 1886, p. 132.

‡ These are preferred simply because Kimball has revised them since Soetbeer's figures were published. The oftener such estimates are revised the more accurate they become.

§ Edel-Metal-Production, 1879.

Mean annual product, relative product, and relative value of gold and silver, 1493–1885.

Period.	Mean annual product.		Ratio of silver product to gold product.	Ratio of value per kilogram gold to silver.
	Gold.	Silver.		
	Kilograms.	*Kilograms.*		
1493–1520	5, 800	47, 000	8. 1	*10. 75
1521–1544	7, 160	90, 200	12. 6	†11. 25
1545–1560	8, 510	311, 600	36. 6	‡11. 30
1561–1580	6, 840	299, 500	43. 8	11. 50
1581–1600	7, 380	418, 900	56. 8	11. 80
1601–1620	8, 520	422, 900	49. 6	12. 25
1621–1640	8, 300	393, 600	47. 4	14. 00
1641–1660	8, 770	366, 300	41. 8	14. 50
1661–1680	9, 260	337, 000	36. 4	15. 00
1681–1700	10, 765	341, 900	31. 8	§14. 97
1701–1720	12, 820	355, 600	27. 7	15. 21
1721–1740	19, 080	431, 200	22. 6	15. 08
1741–1760	24, 610	533, 145	21. 7	14. 75
1761–1780	20, 705	652, 740	31. 5	14. 73
1781–1800	17, 790	879, 060	49. 4	15. 09
1801–1810	17, 778	894, 150	50. 3	15. 61
1811–1820	11, 445	540, 770	47. 2	15. 51
1821–1830	14, 216	460, 560	32. 4	15. 80
1831–1840	20, 289	596, 450	29. 4	15. 75
1841–1850	54, 759	780, 415	14. 3	15. 83
1851–1855	199, 388	886, 115	4. 4	15. 41
1856–1860	201, 750	904, 990	4. 5	15. 29
1861–1865	185, 057	1, 101, 150	5. 9	15. 41
1866–1870	195, 026	1, 339, 085	6. 9	15. 56
1871–1875	173, 904	1, 969, 425	11. 3	15. 98
1876	165, 956	2, 323, 779	14. 0	17. 88
1877	179, 445	2, 388, 612	13. 3	17. 22
1878	185, 847	2, 551, 364	13. 7	17. 94
1879	167, 307	2, 507, 507	15. 0	18. 40
1880	163, 515	2, 479, 998	15. 2	18. 05
1881	158, 864	2, 592, 639	16. 3	18. 16
1882	148, 475	2, 769, 065	18. 6	18. 19
1883	144, 727	2, 746, 123	19. 0	18. 64
1884	153, 193	2, 788, 727	18. 2	18. 57
1885	159, 289	2, 993, 805	18. 8	19. 41

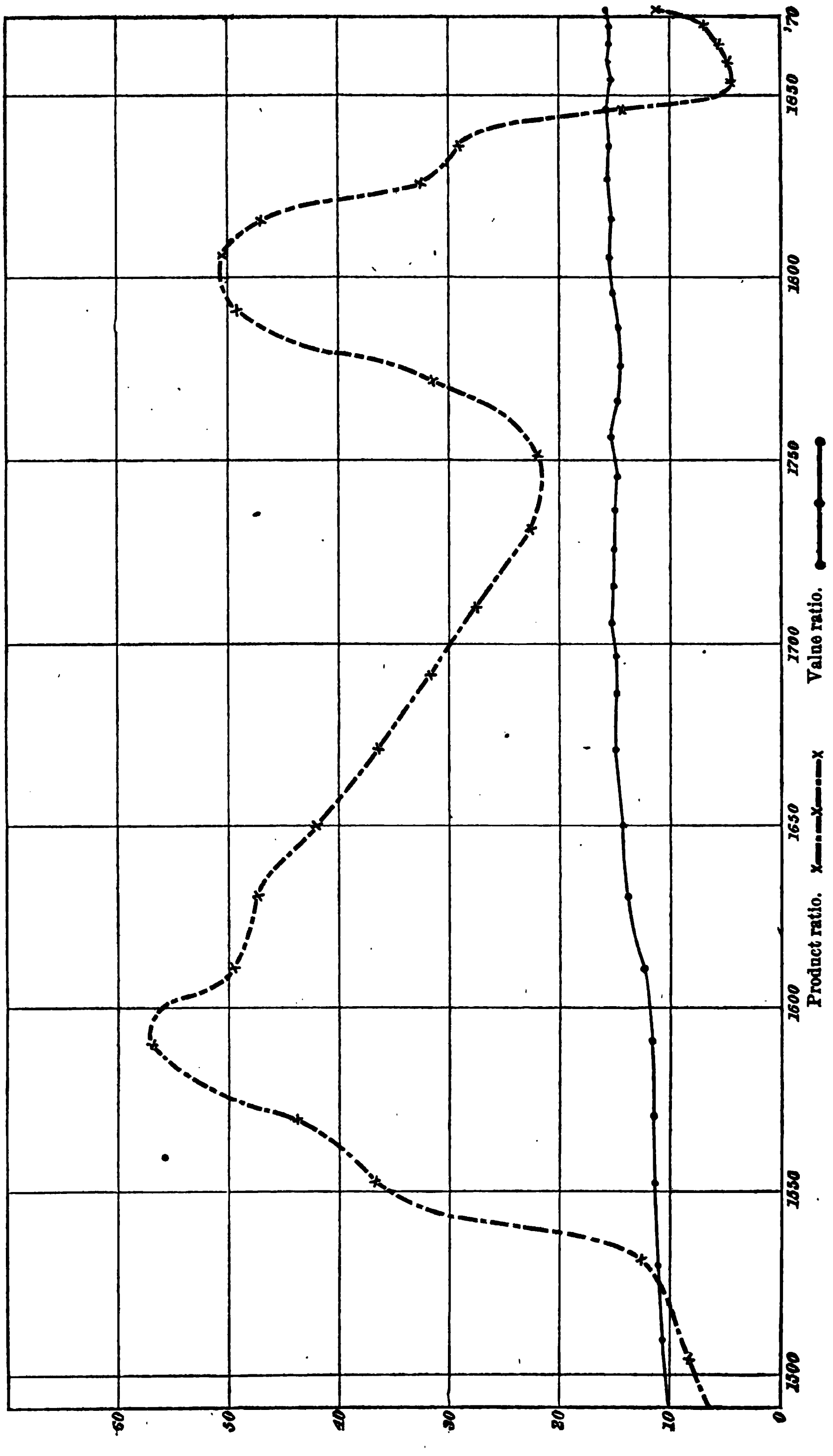
* For the period 1501–1520.
† For the period 1521–1540.
‡ For the period 1541–1560.
§ The curve is plotted for periods of ten years from 1680 on to 1850.

In the diagram on page 430 I have plotted the two ratios for each period given in the table from 1493 to 1870. The horizontal distances are proportional to the time, and the two curves represent the ratios. Each value of the product ratio, or of the average yearly product (by weight) of silver divided by that of gold, is marked by a cross, and each value of the value ratio, or of the number of pounds of silver which a pound of gold would buy, is marked by a dot.

The diagram shows most manifestly that during the period 1493–1870 the relative product exerted little or no influence upon the relative value. Between 1600 and 1650 there was a small rise in the relative value of gold, which is, perhaps, ascribable to the great rise of the product ratio. This reached a maximum in 1600, and its increase was caused by the great output of Potosi soon after the discovery of the amalgamation process. After 1650 the relative value remained between 14 and 16. As the value curve is plotted from data for the mean value for several years, it is important to observe that there were no considerable minor fluctuations which have been obliterated by taking averages. Soetbeer gives the value for each year from 1687 onward, and in no single year between that date and 1870 did the mean value ratio exceed 16.25 or fall short of 14.14.

In the diagram on page 431 similar curves are shown on a larger scale and in more detail for the period 1866–1886. It will at once be noted that from 1873 onward the two curves show the strongest sympathy. Every fluctuation in each is accompanied by a similar fluctuation in the other. No one accustomed to the study of relations as represented by curves could hesitate to conclude that a very intimate relation existed between these lines, and that the two ratios which they represent are connected in the most intimate manner. The probability against such a number of corresponding fluctuations being accidental is so great that it may be pronounced substantially infinite.

Relative Product and Relative Value of Gold and Silver, 1493-1870. (See page 429.)

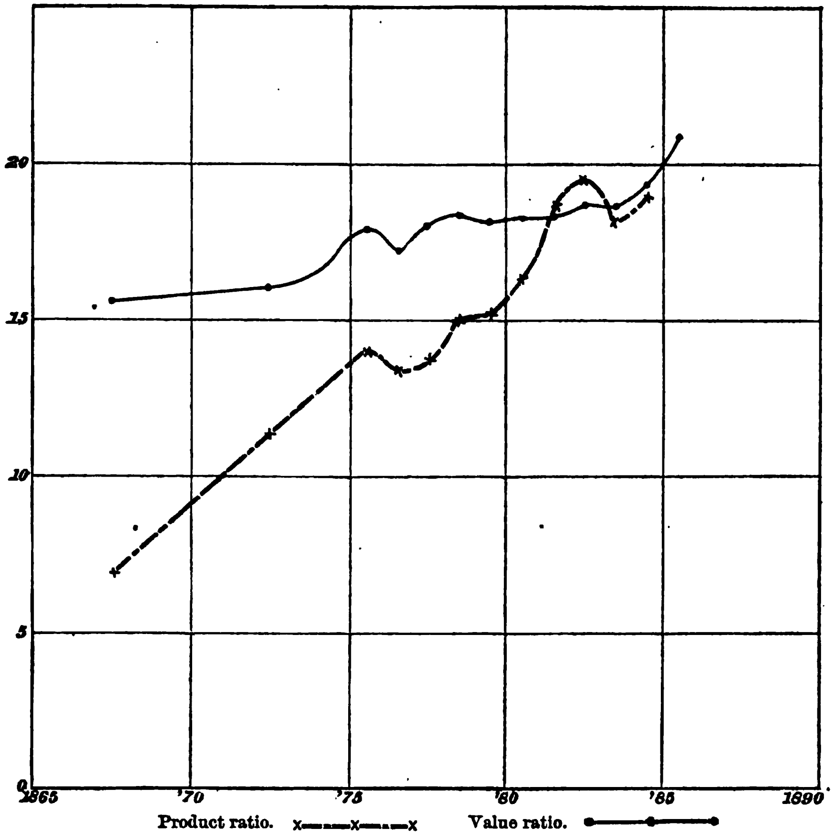


It appears, therefore, to be certain that since 1873 the price of silver has been chiefly determined by the relative production, or perhaps more strictly, that the two ratios have exerted a strong mutual influence, while it is equally certain that from 1650 to 1872 the price of silver and the relative production of the two metals were independent. It is most important to ascertain the cause of this difference between the two periods, if possible.

Cause of the difference before and after 1873.—Aside from this relation between the two ratios, the most striking difference between these periods is the average annual production, and the cause of the change in the law governing the price of silver seems probably connected with the change in the annual yield of the mines. The increased yield after 1850, however, did not affect the price immediately, or, indeed, for a considerable number of years, showing that a certain accumulation of the precious metals was necessary to induce a change in the conditions governing the price of silver.

Relative Product and Relative Value of Gold and Silver, 1866—1886.

(See page 429.)



The statement that the value of silver relatively to gold remained substantially constant for over two hundred years at about 1 to 15½ is equivalent to the statement that in such quantities as silver bullion was offered to buyers it found a market at that price, and that silver coin was always exchangeable for gold at the same figures, How did it happen that although the ratio of production fluctuated enormously, and presumably also the relative quantities of coins of the two metals, neither metal was depreciated? The answer I believe to be very simple. It is evident that people who handle money care very little, under ordinary circumstances, what is the nature of the money in their possession, provided that, when they choose, they can exchange it at par for other forms of currency. After United States notes became redeemable in gold there was no run upon the Treasury, because holders of the notes were sure of being able to get gold for them whenever they wanted it. In the same way token coins are as freely received in trade as gold is, so long as it is known that they will be redeemed on demand. Under certain still to be investigated conditions, therefore, any country could at will vary the proportions of gold and silver in the currency, provided that a sufficient reserve of each metal was always maintained to meet any probable sudden demand for the exchange of one for the other. Under such conditions it is evident that great fluctuations in the product ratio could occur without impairing the ability of commercial nations to redeem, in gold, quantities of silver sufficient for the needs of the community, at the legally established ratio. So long as this remained possible the price of silver could not vary considerably. No one would sell silver below the coining value when he could get that rate for it from the Government, and no one would pay a higher price for silver when he was at liberty to exchange gold coin for silver coin dollar for dollar.

This stability in the price of silver could be maintained only so long as the quantity of circulating medium demanded by trade, added to the inevitable losses and waste of the metals and to the quantity urgently demanded at the standard price, or above it, for industrial consumption, and for permanent exportation to semi-civilized countries, equaled or exceeded the available supply. It is clear that this state of things is compatible only with a moderate production; for the moment that more of either metal was put on the market than could be absorbed in these ways, it would be more profitable to the producers to submit to a discount than to hold their bullion. If the surplus were not a mere local and temporary matter, the price of silver in terms of gold would rise or sink all over the world. If silver were the metal in excess, it would drive gold out of circulation in those countries where an attempt was made to retain silver as a standard, and could circulate only as a token coinage in those countries which adhered to gold. If gold instead of silver were in excess, the parts played by the two metals would be reversed.

Great fluctuations in the ratio of the gold product to the silver product can thus occur without necessarily affecting the price of silver to a considerable extent, so long as the total product of the precious metals does not exceed the demand of the commercial world for coin, plus the demand for these metals at coining rates for non-monetary application. Under these circumstances the mints completely control the precious metal market, and make the price of silver to suit themselves. But when the quantity of the precious metals produced exceeds the limit just defined, the mints, being unable to increase their output beyond the needs of the commercial world for coin, can not possibly retain control of the market. The relative value of the two metals will then cease to be fixed by coinage laws, and will be determined by purely commercial considerations. As has already been pointed out, whenever trade relations determine the relative value of the precious metals, there will be a strong tendency for the prices to adjust themselves in the inverse ratio of the products.

It is certain that prior to 1873 the coinage laws fixed the price of silver, and that the national treasuries were able to control the market for silver, for in no other way could considerable fluctuations have been avoided. It is also certain that in 1873 the laws ceased to determine the price, as if there were an excess of silver in the market, and that since that time the price of silver has been chiefly determined by the ratio of the production of silver to that of gold, as it would be if either of the two metals were produced in excess. The analysis of Dr. Soetbeer and the coinage statistics also show that a diminishing proportion of the yield of each metal is added to the available stock of coin. All of these facts point to the conclusion that the supply of silver is now greater than the demand for it at coining rates.

Probabilities as to the future prices of silver.—Silver producers and all those interested in obtaining good prices for silver naturally wish that the value ratio should return to 15½, and desire legislation tending to produce that result. It seems to me conclusively shown above that the volume of the precious metals is greater than the demand for them at coining rates, and that the market for silver is therefore no longer under the direct control of the coinage laws as it was prior to 1873. This being the case, no mere readjustment of the proportion of gold and silver in circulation will materially affect the price; for no more currency can be forced upon the commercial world than is demanded by the exigencies of trade,* and the quantity of the precious metals in the market beyond this amount is now sufficient to determine their relative price irrespective of the coinage laws.

Since, then, the mints can not now put into circulation all the silver not demanded at or above coining rates, they stand in the market on the same footing as other buyers. It is conceivable that the commercial nations should agree to buy silver in any quantities which might be needful to raise the price of silver to coining rate, paying in gold or in Government securities and withdrawing the silver not needful for coinage from commerce. This seems to me the only way open to any buyer to control the market, and it seems to have been the way in which the treasuries of the world did control the market prior to 1873. The peculiarity of the earlier period consisted in the fact that the surplus of the precious metals not needed for coinage and not called for in open market at coining rates was nil, whereas it is now very great. If, in 1885, some $24,000,000 worth of silver had been withdrawn from commerce, in addition to what was actually withdrawn, the weights of the remaining gold and silver products would have been to one another in the inverse ratio of their coining value per ounce, and, according to the results deduced above, the silver left in the market or in circulation would have tended to the rate of $1.2929 per ounce. The price, however, could now be raised to this figure so cheaply, for great quantities of silver have been withdrawn from circulation by individuals at the low prevailing rates of late years, and a sudden large rise in price would bring much of this once more into the market, where it would produce the same effect as newly-mined metal. A rise of price would also be a great stimulus to the silver industry, and the output would quickly increase by millions of dollars.

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*When a nation obtains money from abroad and spends it rapidly at home, a local inflation of the currency with its attendant disasters occurs, but the coin rapidly redistributes itself. Under normal conditions there exists no machinery for putting more coin into circulation than is called for.

It is manifest that the commercial nations could not be brought to embark in so hazardous an experiment as the attempt to maintain the price of silver at the expense of an increase in expenditure or in debt which would certainly amount to tens of millions of dollars yearly, and which might reach $100,000,000. This being impracticable, I believe the price of silver to be wholly beyond their control. Half-way measures would not answer the purpose, for, if the commercial nations were to agree to coin for private account a quantity which, though large, should prove insufficient to raise the price of silver to coining value, and were at the same time to make silver redeemable in gold, the result would simply be a run on every treasury and the exhaustion of the gold reserve. This would amount to the adoption of a silver standard. and gold would then be quoted as at a premium, but the relative values of the two metals would not necessarily be changed; for as long as the mints could not control the market for both gold and silver, the relative values of the two metals would be determined by commercial considerations. Silver coined for public account while the market price of the silver is below coining rate is in every respect token money. The United States coin nearly thirty million silver dollars a year for the express purpose of raising the price of silver, and the price of silver, instead of rising, continues to sink.*

As commerce grows the demand for the precious metals increases, and it is possible that this demand will eventually become so great that the price of silver will again come within the control of legislation; or, in other words, all the silver product not demanded at coining rates or above them for non-monetary consumption may come to be needed for coin; but there seems to be no immediate prospect of this. Though population is increasing very fast, the ratio of the silver product to the gold product is increasing still faster, and as South America and Africa become commercial countries they will demand gold for their international transactions as well as silver for home use. Indeed, the more commercial they become the more the character of their currency will approximate to that of other commercial countries. In the mean time their silver deposits will be worked. They can not be relied upon, therefore, to absorb the surplus silver of the world. I can but conclude that the time when the demand for coin will restore the value of silver to its old level is far distant.

Until that time comes the price of silver will, in my opinion, be chiefly controlled by the ratio of the weight of the silver product to that of the gold product. The product ratio will probably increase at a diminishing rate, because the price of silver will fall, and the production will be correspondingly lessened. The ratio of the value of gold to that of silver, which is already over 20, will, in my opinion, ultimately rise to above 25, and, from present indications, it is possible that it may touch 25 by the year 1900.

NOVEMBER, 1887.

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* These dollars pass at par in spite of the fact that their bullion value is only about 75 cents, because they are practically redeemable, although not nominally so. The Government receives from its debtors any of the kinds of money which it issues, and pays its creditors in any form of currency they may elect to receive. There is, therefore, as yet, no difficulty in returning to the Treasury any silver not wanted, or in obtaining from the Treasury an equal amount of gold. The silver dollars are thus, in fact, token money as much as are the nickel five-cent pieces. Both have an intrinsic value, though not that stamped on their faces. They pass current because they are redeemable.

APPENDIX D.

MATERIALS

TOWARD THE ELUCIDATION OF THE

ECONOMIC CONDITIONS

AFFECTING THE

PRECIOUS METALS

AND THE

QUESTION OF STANDARDS.

PREPARED AT THE REQUEST OF THE

SOCIETY FOR PRESERVING THE ECONOMIC INTERESTS
OF TRADE AND MANUFACTURES,

BY

Adolf
Georg AD. SOETBEER.

SECOND REVISED EDITION.

TRANSLATED BY

F. W. TAUSSIG, LL. B., PH. D.,
Assistant Professor of Political Economy in Harvard University.

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TRANSLATOR'S PREFACE.

I have undertaken with pleasure the translation into English of Professor Soetbeer's materials on the silver question. No other such valuable and complete collection of facts and figures exists, and it can not but further the solution of that question to make them available to the English-speaking public. Professor Soetbeer has gathered and sifted his information with extraordinary care and industry, and his results may be accepted and used with confidence.

The translation had to be done quickly, and it was not practicable to reduce the figures in the table to our system of weights and coins. Professor Soetbeer, however, has himself been so careful to reduce all important figures to terms of metric weights or of German coins, and has everywhere done so much to make comparisons easy, that little difficulty will be found in making all needed applications to our own country from his figures. The need of haste has also prevented me from revising the tables as carefully as I should have preferred. The printed sheets containing Professor Soetbeer's figures have been sent directly to the Government Printing Office, where they have doubtless been reproduced with accuracy. Lastly, I beg indulgence for imperfections in style which might have been avoided by greater deliberation. Accuracy has been aimed at above all things.

F. W. TAUSSIG.

CAMBRIDGE, MASS.,
November, 1887.

PREFACE.

In the beginning of May, 1885, I was asked by the president of the Society for Preserving the Economic Interests of Trade and Manufactures to bring together "Materials toward the elucidation of the economic conditions affecting the precious metals and the question of standard of value," which were then to be published for the use of its members and others interested in these problems. The great extent of the task, and the peculiar difficulties of carrying it out with the necessary exactness and completeness, were immediately apparent to me, while, on the other hand, I had to acknowledge that it was timely and important in the present stage of the silver question. This last consideration, and the fact that I had already prepared materials relating to the question, finally overcame my hesitation, and I declared myself willing to undertake the execution of the desired publication. This was done, nevertheless, on the express condition that full assistance should be rendered by the Bureau of Trade Statistics in Hamburg, whose liberal assistance I had had the pleasure of enjoying in previous investigations. This was promised, and has been rendered to me, as well in the first as in the present second edition, in the most friendly and complete manner. If the materials here put together fulfill the intended purpose and prove of permanent statistical value, the credit belongs, after the original movers in the society mentioned above, to the complete and thorough co-operation of the Hamburg Bureau of Trade Statistics, and especially to its head, Mr. G. G. Heinz. Without this indispensable aid the present publication, notwithstanding all the previous preparation and all other aid, would have been quite impossible.

The supposition on which the work was undertaken was at first that it was only to have statistical and bibliographic contents, and that discussions of principle on the merits of and objections to the gold standard and the double standard, as well as controversies on coinage policy, were to be excluded. On that account the endeavor was made to render the selection and presentation of opposite opinions (in so far as their presentation was necessary to an understanding of the materials) quite impartial. Further, it was necessarily my point of view, when once the collection of materials had been taken in hand, to keep these as free as possible from all superfluous even though perhaps interesting discussions; while on the other hand desire for brevity, or consideration as to the number of pages, was not to induce me to omit or abridge anything which it was of practical or scientific interest to learn or to have completely presented. Consequently the Materials have become of considerably greater size than had been originally intended. We hope, however, that this will be so much the less a reproach, since the increase has been in part brought about through the fact that the information communicated by the great banks and other official sources, which has not before been brought together in such completeness, has been set forth in all detail.

The same considerations have been kept in mind in this second edition. For the rest, it has been completed in essential points, and in large part revised.

In the first place, and as a matter of course, the statistical results of the year 1885, and averages from 1881 till 1885, instead of those from 1881 till 1884, were inserted.

In regard to the other changes and revisions of importance, further information will be found in the various parts of the work.

The first part of our work consists necessarily of surveys of the production of gold and silver. On this point we have used our own earlier estimates, and from these have taken in a concise abstract the more important points, with the needed explanations. For recent years the latest and most trustworthy data have been inserted; in part they have been reached through inquiries of the German diplomatic representatives in the different producing countries, which have been kindly undertaken at the request of the Ministry of Foreign Affairs in Berlin. The statements and estimates of the production of gold in recent times show a considerable decrease in comparison with the first decades after the discovery of the Californian and Australian gold fields. We estimate the production of gold somewhat higher than is usually the case in England and in the United States. The difference arises because we have felt compelled to put a higher estimate on the production outside of the United States, Australia, and Russia. This accessory gold production, if so it may be called, has been assumed by us to be for the last five years between 23,000 and 24,000 kilograms annually, which is rather too low than too high an estimate.

The approximate correctness of our estimate of the production of the precious metals we venture to emphasize the more because even in very recent times and in prominent publications dealing specially with such subjects (for instance, in the Journal of the Institute of Bankers, March, 1886, p. 176), strikingly low statements of the yearly productions of the precious metals appear. We reproduce the statements of Sir Hector Hay, there given, for the years 1881 to 1885, and opposite them place our own estimates:

Years.	Gold.		Silver.	
	Hay's estimate.	Our estimate.	Hay's estimate.	Our estimate.
	Marks.	*Marks.*	*Marks.*	*Marks.*
1881	392, 000, 000	443, 000, 000	376, 000, 000	397, 000, 000
1882	330, 000, 000	414, 000, 000	401, 000, 000	424, 000, 000
1883	330, 000, 000	403, 000, 000	360, 000, 000	484, 000, 000
1884	330, 000, 000	408, 000, 000	346, 000, 000	443, 000, 000
1885	330, 000, 000	(ca. 410, 000, 000)	350, 000, 000	(ca. 453, 000, 000)

Our detailed statements and estimates and reasonings in regard to the production of the precious metals in the important countries (see pages 17, *seq.*) should leave no doubt that these figures, as remarked above, are considerably within the facts, and are not to be considered as in any way exact.

For a long time, in the controversies over bi-metallism, the estimate of the varying gold and silver production from year to year was apt to be treated as the most important factor in the question of standards. An impartial consideration of the facts supports the view that, while in course of time the general conditions of the production of the precious metals may exercise a decisive influence, it makes little difference whether in particular years the production of gold and silver varies by a few per cents, or possibly by half a per cent. The total production of the precious metals from 1851 till 1885 may be estimated approximately at 6,383,000 kilograms gold and 57,564,000 kilograms silver. The annual production on the average of the last five years, 1881 to 1885, amounted to about 149,000 kilograms of gold, with a silver production of more than 2,800,000 kilograms, while on the average of the years 1856 to 1860 there were produced approximately 201,750 kilograms gold and only 904,990 kilograms silver.

The calculation of the value of the silver product has undergone an essential change in this second edition of the Materials. After the price of silver in recent years had undergone so enormous a change that the ratio of silver to gold in free markets was nearly 21 to 1, it appeared no longer proper to follow the former custom of estimating the value of silver throughout on the ratio of 15½ to 1. But, obviously, consistency required that if for recent times the actual ratio of silver to gold was to be used in calculations, this actual ratio should also be used, wherever possible, for earlier times, in calculations of the value of the silver product; for instance, for the periods when the ratio was less favorable to gold. If for the period 1881 to 1885 the kilogram silver was considered equal to 150 marks, German gold, then for the period 1581 till 1600 the kilogram silver was to be reckoned as 236 marks of gold.

The second part gives monthly statements of the ratio between gold and silver from 1851 till August, 1886, on the basis of London prices of silver. Here there can be no question of any uncertainty in the data. In the decade 1841 to 1850 the average price of silver in London was 59⅝ pence per standard ounce (ratio, 15.82 to 1); in the decade 1861 to 1870 it was nearly 60 pence (ratio, 15.48 to 1). In the first nine months of 1886, however, it was only 45$\frac{3}{16}$ pence (ratio, 20.88 to 1)!

In consideration of the extraordinary interest which attaches to the great changes that have taken place in the course of centuries, and especially in recent times, in the ratio of gold to silver, we have considered it proper to treat the history of the ratio in the new edition with greater detail than in the first edition. We hope that this addition will be welcome to many readers. It will appear from it that more than two thousand years ago the ratio of the precious metals already occupied men's minds, and that in former centuries the relative value of gold rose considerably within a comparatively short space of time.

The third part is concerned with the important and difficult task of the consumption and location of the precious metals. So much as is used for coinage may be ascertained with exactness from the records of the mints. Our figures show that, in civilized countries, in the period of thirty-five years, from 1851 to 1885, about 23,104 million marks of gold and more than 7,506 million marks of silver (nominal value) were coined; that is, considerably more gold has been coined than was newly produced in that period. This is explained by the circumstance that large quantities of gold coins have been melted down and recoined. In recent years such recoinages seem to have diminished very much, as regards those coins for which there is likely to be, sooner or later, a prospect of remitting them with profit to the country whence they came. In regard to silver coins, as well legal tender as subsidiary coins, the case is different. The coinage in civilized countries since 1875 by no means equals the production of silver, and what once has been coined remains in circulation, except in so far as it is retired by the governments or is lost.

The industrial use of the precious metals was first especially investigated by us in 1881, so far as it was possible to obtain information about it, although it was obvious at the outset that exact results were not to be expected. In the present Materials it has been attempted to complete and carry further the estimates on this point. According to these estimates it seems necessary to assume that, although the industrial use of silver in European countries is nearly stationary and is much below the recent production of silver, the use of gold for ornament and other purposes in the arts shows a tendency to grow, and absorbs a very considerable part of the annual production of gold. Upon the whole, the present annual industrial use of gold is estimated by us at, in round numbers, 90,000 kilograms. We believe that this estimate may be accepted, although the investigations which the Director of the Mint of the United States has made in regard to the use of the precious metals in the arts for the year 1885 show a considerable smaller use than a similar investigation indicated for the year 1883. (See below, pages 69, 70.) It must be remembered that in our estimate of the use of the precious metals in the arts not single years, but averages of several years, are considered, and that, if a partial diminution of the use of gold for certain kinds of ornament may appear, on the other hand the increase of population and wealth in the European countries in one or another way, no single way perhaps noticeable, lead on the whole to an increase of the non-monetary use of gold. In this third part a complete presentation is given, also, of the flow of the precious metals to eastern Asia, in which not only the enormous shipments of silver, but in recent years also the exports of gold, to India (amounting between 1880–'81, and 1884–'85, to more than 94,000,000 marks per year) deserve special attention.

In the fourth part the much-discussed subject of the movement of the precious metals from country to country is taken up. In the statistics of the international trade of some of the most important countries the figures in regard to the export and import of the precious metals show, as our comparative statements make plain, the most extraordinary divergencies. It is much to be wished that the presentation of these divergencies for a series of years, especially in regard to France, may induce the authorities to investigate thoroughly (as has not yet been done) this state of things. It is the more welcome that n those countries which are above all to be considered, England and the United States, the general agreement of their statistics in regard to the movement of the precious metals during longer periods gives us an assurance that, on the whole, we have positive data for the approximate ascertainment of the most important international movements of the precious metals. The practical agreement of the figures in the statistics common to these two countries, which it is impossible to ascribe to mere accident, permits us to assume that the data of their intercourse in the precious metals with other countries do not vary too far from the facts.

If, notwithstanding the obvious inaccuracy of the statistics, our Materials present a series of tables in regard to the export and import of the precious metals in several countries, we have been influenced by the consideration that these figures, since put together for each country on the same plan, may serve for comparing different years with each other. There would have been no difficulty in increasing considerably the number of such tables; but the need of conciseness required some limitation.

In the fifth part, which considers the probable supply of the precious metals on hand in European countries, we have given the information offered us in the most friendly manner, and in sufficient completeness, by the administrations of the leading banks. We have given separately the amounts of gold and silver in the great banks and in certain treasuries at the end of each year since 1871, and for certain banks since 1851, so far as positive statements were to be had. The extraordinary interest for the question of standards which attaches to these exact figures is obvious. Unfortunately there are gaps; but on the whole one grasps readily the shiftings which have taken place in the accumulation of the great stock of gold and silver.

The development of credit and of clearing-house transactions in the wholesale trade of recent times has been the means by which the cash holdings of most great banks have remained in wonderfully small proportion to the enormous quantities and the gigantic total of the exchanges based upon them. A few decades ago, in the larger trading countries, these exchanges took place chiefly by means of bank notes, of which a larger or smaller part was not covered by coin. The rise of prices, speculation, and commercial crises, were in those times ascribed mainly to excessive issues of notes, and it was supposed to be of particular importance for commercial statistics to have continual information as to the notes in circulation and the coin held by the banks for their redemption. Since the accounts of most of the banks of issue state, in addition to the coin reserve, the amount of notes in circulation, it is possible to ascertain the amount of uncovered notes, which form an equally important and equally effective circulating medium as the notes represented by actual coin. Our materials give, in the usual manner, the note circulation indicated by the official statements. But we have not refrained from pointing out that checks to order, and deposits payable on demand, have been equally important for the quantity of the circulating medium and for the purchasing power in existence, as bank notes, and that in this state of affairs it would be more proper to set these obligations side by side with the note circulation.

We have put together (see page 109, below), according to the figures that lie before us (completing them by estimates in some cases) the coin holdings of the banks and certain treasuries at the end of calendar years, and the results, reckoned in German marks, are as follows:

Year.	Amount.	Year.	Amount.
	Marks.		*Marks.*
1877	2, 890, 000, 000	1882	4, 070, 000, 000
1878	2, 850, 000, 000	1883	4, 600, 000, 000
1879	3, 500, 000, 000	1884	4. 680, 000, 000
1880	3, 790, 000, 000	1885	5, 040, 000, 060
1881	3, 900, 000, 000		

A continuous increase appears in these coin holdings, which form the secure metallic basis for the gigantic exchanges of domestic wholesale trade and for the international movement of gold. Whether this increase is to be explained by the fact that the ordinary use of money in retail trade continually dispenses with large quantities of gold coins, and permits these to flow into the banks, or whether, notwithstanding the decrease in gold production, considerable parts of the annual product are added to the monetary gold supply, we do not undertake to say. Opinions differ on this point. But certainly a careful study of the changes in the coin holdings of the individual banks is of special interest, and complete and careful information in regard to it will be welcome. In the main, we have to deal here only with positive statistical facts.

To the general statement of the coin holdings of the banks we add in our Materials an attempt to estimate the total monetary supply of the precious metals in the different civilized countries. Our estimate of the presumable existing quantity is 13,212,000,000 marks of gold, and 7,843,000,000 marks of silver (nominal value). France has possessed for some time, and still possesses, by far the most important monetary supply of gold and silver.

The sixth part contains a general statement, for the period from 1851 to 1885, of the rate of discount at some of the more important centers of trade, giving the highest, the lowest, and the average rates in each year. It contains also a corresponding statement of the more important rates of foreign exchange. It goes without saying that we have made special endeavors to present these data correctly, from the best sources.

The seventh and last part will perhaps excite the liveliest interest in many quarters, since it is concerned with the much discussed and difficult problem of the lowered level of the prices of commodities and the purchasing power of gold. This part has also been treated with the greatest fullness, since it was impossible to restrict the exposition to mere statistical data, but was necessary to communicate as clearly as possible the opinions and reasons of the opposing authorities and parties, and to present them without bias. We doubt whether we have succeeded in doing this in a manner that will satisfy all persons; but there has been no lack of good will.

We have given, as a rule, in the words of the writer himself, even though necessarily in a condensed quotation, the opinions put forth in recent times on this question by various authors—on the one hand by Goschen, Giffen, Herm. Schmidt, and Arendt; on the other hand, by Hansard, Nasse, a German manufacturer, and Leroy-Beaulieu. We have given opinions of our own only on one point. We thought it desirable to call attention not only to those discussions of the purchasing power of gold which rests only on the wholesale prices of the most important commodities, but also to another side of the question of the value of money. Here, also, consistently with the general character of our investigation, we have refrained from general discussions and have let the facts speak for themselves. Before presenting the general statistical statements and combinations in regard to changes in the level of prices, we communicate a series of trustworthy data in regard to the changes that took place during the years from 1851 to 1885 in the cost of average living, in the wages of laborers, in salaries, in rents of dwellings, in rents of land, etc. These indicate that in such matters the purchasing power of gold by no means has that tendency to rise which is observable in the wholesale prices of commodities.

So far as regards the investigation of the changes in the level of prices, we have no longer given in this edition, with the former detail, the tables published in England, and the index numbers connected with them, in order that we mignt give greater space than was possible in the first edition to the ascertainment of the actual average prices of important commodities according to the Hamburg trade statistics. We have now given the average prices for one hundred and fourteen articles (adding, as a necessary supplement, to the hundred selected articles of the Hamburg statistics, fourteen English articles of export), and have given them not only for periods of several years, but also in detail for each year from 1851 to 1885, with the corresponding index numbers. The wish for such a completion of the statistics of prices has been urged from several sources, and the propriety of such a wish had to be admitted. We are by no means disposed to set aside the objections which can be brought forward against too implicit a reliance on the so-called index numbers (the per cents. of the comparative average prices of many commodities in different years or periods), yet we believe that in this presentation of the movement of the prices of one hundred and fourteen carefully and impartially selected important commodities, the method of index numbers supplies an approximately sound basis for conclusions as to general prices. In any case, this comprehensive and clear presentation by the Hamburg bureau of trades statistics is an important contribution to the understanding of the recent development of trade.

Although our Materials, notwithstanding all the attention and care devoted to their collection and preparation, and notwithstanding their greater volume, will not satisfy even in the present enlarged edition all demands, we may yet hope that they will be of permanent value as a source of information in these discussions. We trust they may also serve for the easier procurement in the future of needed trustworthy statistical information. It will be a comparatively easy task to gather and to use in better form, on the basis of these materials, further more important data, which will serve to complete and continue them.

Contemporaneously with this volume, and based upon it, there will appear a separate sheet entitled, "Graphic Charts on the Silver Question."

In conclusion, we beg to express our sincere thanks to those who have aided us in the friendliest manner by their many valuable communications.

AD. SOETBEER.

GÖTTINGEN, *October* 1, 1886.

PART I.

PRODUCTION OF THE PRECIOUS METALS.

PRODUCTION OF THE PRECIOUS METALS.

GENERAL STATEMENTS OF GOLD AND SILVER PRODUCTION IN THE YEARS 1493–1885.

The following general statements are based on the volume entitled, "Production of the Precious Metals and Ratio between Gold and Silver from the Discovery of America to the Present Time," by Dr. Adolph Soetbeer, Gotha, 1879, 4to, and on an essay by the same writer in the Jahrbücher für National-Oekonomie und Statistik (new series, Vol. II, Jena, 1881), entitled "The Statistics of the Precious Metals in 1876–1880." For the years since 1880 the most recent statements and estimates have been consulted.

The statements of weight refer to kilograms of pure silver and pure gold.

In the statements of value the kilogram of gold is reckoned as equal to 2,790 marks (3,444$\frac{4}{9}$ francs). The kilogram of silver was reckoned in the first edition of this work, on the usual plan, as equal to 180 marks (222$\frac{2}{9}$ francs). In this reckoning the ratio 15½ to 1, regarded for a long time as normal, was used. Strictly speaking, this reckoning was justified only in the period from the beginning of this century till about the year 1870. Its application for the subsequent years was permissible so long as the average price of silver, after 1873, had not changed very much from the supposed normal price, and so long as the opinion was entertained in many quarters that the fall in the value of silver was a temporary phenomenon and that the former ratio would soon reappear. But after the depreciation of silver had again set in, and gone farther, in 1885, and the prospect for a so-called reinstatement of silver, or for the establishment of a double standard in civilized countries on the basis of the former French ratio, had disappeared, it seemed necessary to abandon the uniform reckoning of the value of silver, and to undertake the reckoning with a consideration of the actual ratio to different periods.

So far as the period from 1687 till 1886 is concerned, there is little difficulty in making such a reckoning, since, as will appear below, the average annual ratio for this period can be positively ascertained. On the other hand, in regard to the ratio during the period before 1687, we are compelled to use estimates, and therefore the statement of the value of the silver product from 1493 to 1686 in terms of present gold coins (marks or francs) can be only an approximate one. But, however great may be the possibility of error in such a new calculation, for long periods in this early time, of the value of the silver product, it must be admitted that it comes closer to the facts than the method which assumed the same ratio for all periods.

In the statements of the production in single countries, ores containing silver and gold, and exported, are not considered, but the metals extracted from such ores are ascribed to the countries where the ores were treated.

1. *Total production of the precious metals.*

Periods.	In weight.				In value.					
	Gold.	Silver.	Gold.	Silver.	Gold.	Silver.	Gold.	Silver.	Gold and silver.	1 kilogram silver.*
Average of—.	*Kilos.*	*Kilos.*	*P. ct.*	*P. ct.*	*Marks.*	*Marks.*	*P. ct.*	*P. ct.*	*Marks.*	
1493-1520.	5,800	47,000	11	89	16,182,000	12,220,000	57	43	28,402,000	260
1521-1544.	7,160	90,200	7.4	92.6	19,976,000	22,370,000	47.2	52.8	42,346,000	248
1545-1560.	8,510	311,600	2.7	97.3	25,742,000	76,965,000	23.6	76.4	100,707,000	247
1561-1580.	6,840	299,500	2.2	97.8	19,083,000	72,779,000	20.8	79.2	91,862,000	243
1581-1600.	7,380	418,900	1.7	98.3	20,590,000	98,860,000	17.2	82.8	119,450,000	236
1601-1620.	8,520	422,900	2	98	23,771,000	96,421,000	19.8	80.2	120,192,000	228
1621-1640.	8,300	393,600	2.1	97.9	23,157,000	78,326,000	22.8	77.2	101,483,000	199
1641-1660.	8,770	366,300	2.3	97.7	24,468,000	70,330,000	25.8	74.2	94,798,000	192
1661-1680.	9,260	337,000	2.7	97.3	25,835,000	62,682,000	29.2	70.8	88,517,000	186
1681-1700.	10,765	341,900	3.1	96.9	30,034,000	63,593,000	32.1	67.9	93,627,000	186
1701-1720.	12,820	355,600	3.5	96.5	35,768,000	65,075,000	35.5	64.5	100,843, 0	183
1721-1740.	19,080	431,200	4.2	95.8	53,233,000	79,772,000	40	60	133,005,000	185
1741-1760.	24,610	533,145	4.4	95.6	68,662,000	100,764,000	40.5	59.5	169,426,000	188
1761-1780.	20,705	652,740	3.1	96.9	57,767,000	124,021,000	31.8	68.2	181,788,000	190
1781-1800.	17,790	879,060	2	98	49,634,000	162,626,000	23.4	76.6	212,260,000	185
1801-1810.	17,778	894,150	1.9	98.1	49,600,000	160,053,000	23.7	76.3	209,653,000	179
1811-1820.	11,445	540,770	2.1	97.9	31,932,000	97,339,000	24.7	75.3	129,271,000	180
1821-1830.	14,216	460,560	3	97	39,663,000	81,519,000	32.7	67.3	121,182,000	177
1831-1840.	20,289	596,450	3.3	96.7	56,606,000	105,572,000	34.9	65.1	162,178,000	177
1841-1850.	54,759	780,415	6.6	93.4	152,777,000	137,353,000	52.7	47.3	290,130,000	176
1851-1855.	199,388	886,115	18.4	81.6	556,308,000	160,387,000	77.6	22.4	716,695,000	181
1856-1860.	201,750	904,990	18.2	81.8	562,899,000	164,709,000	77.4	22.6	727,608,000	182
1861-1865.	185,057	1,101,150	14.4	85.6	516,326,000	199,308,000	72.1	27.9	715,634,000	181
1866-1870.	195,026	1,339,085	12.7	87.3	544,139,000	239,696,000	69.4	30.6	783,835,000	179
1871-1875.	173,904	1,969,425	8.1	81.9	485,207,000	344,649,000	58.5	41.5	829,856,000	175
1876-1880.	172,414	2,450,252	6.6	93.4	481,045,000	382,062,000	55.7	44.3	863,107,000	156
1881-1885.	149,137	2,861,709	5	95	416,098,000	428,760,000	49.3	50.7	844,858,000	150

* Reckoned in marks.

2. *Detailed statements of the production of the precious metals*, 1851-1885, *by weight.*

PRODUCTION OF GOLD.

Periods and years.	United States.	Australasia.	Russia.	Mexico, Colombia, Brazil.	Other countries.	Total.	Estimate of Director U. S. Mint.
Average of the years—	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*
1851-1855	88,800	69,573	24,730	7,710	8,575	199,388	....
1856-1860	77,100	82,392	26,570	7,000	8,688	201,750	....
1861-1865	66,700	77,634	24,084	7,650	8,989	185,057	....
1866-1870	76,000	73,526	30,050	6,940	8,510	195,026	....
1871-1875	59,500	63,129	33,380	7,240	10,655	173,904	....
In the year—							
1876	60,000	49,156	33,600	7,200	16,000	165,956	....
1877	70,300	45,045	41,000	7,100	16,000	179,445	171,453
1878	76,800	43,747	42,100	7,200	16,000	185,847	179,175
1879	58,300	43,307	42,600	7,100	16,000	167,307	163,675
1880	54,200	45,215	41,400	6,700	16,000	163,515	160,155
1881	52,200	45,564	38,500	6,600	16,000	158,864	155,016
1882	48,900	44,075	32,700	6,300	16,500	148,475	148,939
1883	45,140	40,705	35,800	6,400	16,500	144,545	141,733
1884	46,343	42,400	32,908	8,000	16,500	146,151	143,381
1885	47,850	....	....	....	....	....	....

2. *Detailed statements of the production of the precious metals, &c* —Continued.

PRODUCTION OF SILVER.

Periods and years.	Mexico.	Peru, Bolivia, Chili.	United States.	Germany.	Other countries.	Total.	Estimate of Director U. S. Mint.
Average of the years—	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*
1851-1855	466,100	218,600	8,300	48,960	144,155	886,115	....
1856-1860	447,800	190,400	6,200	61,510	199,080	904,990	....
1861-1865	473,000	191,100	174,000	68,320	194,730	1,101,150	....
1866-1870	520,900	229,800	301,000	89,125	198,260	1,339,085	....
1871-1875	601,800	374,700	564,800	143,080	285,045	1,969,425	....
In the year—							
1876	601,000	350,000	933,000	139,779	300,000	2,323,779	....
1877	634,000	350,000	957,000	147,612	300,000	2,388,612	2,174,610
1878	644,000	350,000	1,089,376	167,988	300,000	2,551,364	2,282,573
1879	699,000	350,000	981,000	177,507	300,000	2,507,507	2,313,731
1880	701,000	350,000	942,987	186,011	300,000	2,479,998	2,326,941
1881	721,000	350,000	1,034,649	186,990	300,000	2,592,639	2,458,322
1882	738,000	390,000	1,126,083	214,982	300,000	2,769,065	2,690,573
1883	739,000	510,000	1,111,457	235,063	300,000	2,895,520	2,812,972
1884	785,000	450,000	1,174,205	248,117	300,000	2,957,322	2,770,610
1885	....	....	1,241,000	278,000	(340,000)	....	....

According to the preceding figures, with estimate of the quantity for 1885, the total production of the precious metals from the close of the fifteenth century to the discovery of the Californian and Australian gold fields, and thence to the year 1885, has been:

Periods.	Gold.		Silver.	
	Kilograms.	*Per cent.*	*Kilograms.*	*Per cent.*
From 1493 to 1850 (358 years)	4,752,070	42.7	149,826,750	72.2
From 1851 to 1885 (35 years)	6,383,388	57.3	57,563,631	27.8
Total	11,135,458	100	207,390,381	100

The proportion by weight of gold and silver production in these great periods has been:

Periods.	Gold.	Silver.
	Per cent.	*Per cent.*
1493-1850	3.1	96.9
1851-1885	10	80

3. *Detailed statements of the production of the precious metals,* 1851–1885, *by value.*

PRODUCTION OF GOLD.

Periods and years.	United States.*	Australasia.*	Russia.*	Mexico, Colombia, Brazil.*	*Other countries.	Total.*	Estimate of Director U. S. mint.
Average of the years—							
1851-1855	247,752	194,124	68,907	21,511	23,924	556,308	....
1856-1860	215,109	229,891	74,130	19,530	24,240	562,899	....
1861-1865	186,093	216,617	67,104	21,343	25,079	516,326	....
1866-1870	212,040	205,153	83,840	19,363	23,743	544,139	....
1871-1875	166,005	176,145	93,130	20,200	29,727	485,207	....
In the year—							
1876	167,400	137,155	93,744	20,088	44,640	463,027	....
1877	196,137	125,684	114,390	19,809	44,640	500,660	$113,947,000
1878	214,272	122,063	117,459	20,088	44,640	518,522	119,023,000
1879	162,657	120,837	118,854	19,809	44,640	466,797	108,736,000
1880	151,218	126,161	115,506	18,693	44,640	456,218	106,387,000
1881	145,638	127,134	107,415	18,414	44,640	443,241	103,023,000
1882	136,431	122,981	91,233	17,577	46,035	414,257	98,985,000
1883	125,941	113,575	99,882	17,856	46,035	403,289	94,197,000
1884	120,297	118,296	91,813	22,320	46,035	407,761	95,293,000
1885	133,501	....	....	....	....	....	....

* Figures denote 1,000 marks.

3. *Detailed statements of the production of the precious metals, &c.*—Continued.

PRODUCTION OF SILVER.

Periods and years.	Mexico.*	Peru, Bolivia, Chili.*	United States.*	Germany.*	*Other countries.	Total.*	Estimate of Director U. S. Mint.
Average of the years:							
1851-1855	84, 364	39, 567	1, 502	8, 862	26, 092	160, 387	....
1856-1860	81, 500	34, 653	1, 128	11, 195	36, 233	164, 709	....
1861-1865	85, 613	34, 589	31, 494	12, 366	35, 246	199, 308	....
1866-1870	93, 241	41, 134	53, 879	15, 953	35, 489	230, 696	....
1871-1875	105, 315	65, 572	98, 840	25, 039	49, 883	344, 649	....
In the year—							
1876	94, 357	54, 950	146, 481	21, 945	47, 100	364, 833	....
1877	102, 708	56, 700	155, 034	23, 913	48, 600	386, 955	$81, 041, 000
1878	99, 820	54, 250	168, 853	26, 038	46, 500	395, 461	84, 238, 000
1879	106, 248	53, 200	149, 112	26, 981	45, 600	381, 141	83, 735, 000
1880	107, 954	53, 900	145, 220	28, 646	46, 200	381, 920	85, 321, 000
1881	110, 313	53, 550	158, 301	28, 609	45, 900	396, 673	102, 168, 000
1882	112, 914	59, 670	172, 291	32, 892	45, 900	423, 667	111, 822, 000
1883	110, 850	76, 500	166, 719	35, 250	45, 000	434, 328	116, 923, 000
1884	117, 750	67, 500	176, 130	37, 218	45, 000	443, 598	115, 148, 000
1885	....	....	178, 704	40, 032	(48, 960)	....	....

* Figures denote 1,000 marks.

According to value, on the above figures, the total production of the precious metals for the periods from 1493–1850 and from 1851–1885 has been:

Periods.	Gold.		Silver.	
	Marks.	*Per cent.*	*Marks.*	*Per cent.*
1493-1850 (in 358 years)	13, 258, 000, 000. 2	42. 7	29, 433, 000, 000. 8	75. 4
1851-1885 (in 35 years)	17, 810, 000, 000. 1	57. 3	9, 597, 000, 000. 9	24. 6
Total	31, 068, 000, 000. 3	100. 0	39, 031, 000, 000. 7	100. 0

The proportion between gold and silver production was, by value:

Periods.	Gold.	Silver.
	Per cent.	*Per cent.*
1493-1850	81. 1	68. 9
1851-1885	65. 0	35. 0

If the value of the silver product were calculated, on the plan formerly in use, by considering the ratio to have been 15½–1 throughout (that is, considering the kilogram of silver to have been worth 180 marks throughout), the proportions would be:

Periods.	Gold.	Silver.
	Per cent.	*Per cent.*
1493-1850 (in 358 years)	33	67
1851-1885 (in 35 years)	63. 2	36. 8

NOTES ON THE TABLES OF THE PRODUCTION OF THE PRECIOUS METALS.

In order to prevent frequent misunderstandings in regard to the character of the statistics of the precious metals, and an incorrect judgment of the preceding tables, it seems not superfluous to bring certain general remarks to the reader's attention. One ought neither to overestimate nor to underestimate these statistics—on the one hand, not to demand more from them than, with the best wishes of their authors, they can possibly give, and, on the other hand, not to throw overboard their results with exaggerated mistrust, because of their inevitable gaps and imperfections. The need of information and of tables in regard to the production and use of gold and silver, in regard to the movement of precious metals from country to country, in regard to the presumable supply of gold and silver in the world at large and in the different countries at different times, and in regard to other similar matters, has been constantly and strongly felt in commercial nations, from the discovery of America to the present time. It has led to more or less complete and important compilations. The traditional position of the precious metals, which have been assumed without question to form the universal measure of value and medium of exchange, and the wide-spread and deep-rooted opinion that it was above all the possession of abundant supplies of them that promoted and secured the welfare of a country, inevitably caused great importance to be attached and general attention to be given to these statistical statements, rough and arbitrary as they may in part have been. From the beginning there has been a steady tendency to exaggeration, which sometimes has verged on recklessness. We need only call attention to the erroneous statements, first corrected by Ranke, about the enormous sums of the precious metals which were supposed to have come to Europe from the New World during the very first decades after the discovery of America, and to the curious notions about the early product of the Saxon silver mines. The latter are worth mentioning, not only as a matter of curiosity, but also as a proof how far exaggeration can go. Magister Albinus, citing authentic records, and moreover the authority of Philip Melanchthon, "a trustworthy man, who had no liking whatsoever for things superficial," assures us in all earnestness that from 1474 till the year 1550, that is, in 76 years, there had been got from the mines of Schneeberg the sum of 12,335,520,483 heavy dollars (*unciales*), that is to say, more than the value of 123,355 tons of gold; and that, in addition, the princes had received in tithes $2,055,920,080, and the same sum for seignorage; so that the total product of the silver mines of Schneeberg had been in that period equal to 164,473 tons of gold. The quantities so reported by Magister Albinus, reckoned on the metric system, are equivalent to 425,000,000 kilograms of silver. In fact, however, the annual product of the silver mines of Schneeberg, according to the specific accounts sent to us for the 76 years from 1474 to 1550, amounts to no more than 1,263 kilograms, whereas the above *naïve* exaggeration would indicate an average annual product of 5,500,000 kilograms, or about double the total annual product of silver in the whole world at the present time.

Although great exaggerations, such as those of former times, no longer occur, there is still much reason for mistrusting statements of gold and silver production, so long as trustworthy positive authority is not cited. As a rule, the tendency to overstatement is much more common and more tenacious than that to understatement, especially when new discoveries or unknown countries are spoken of. The presumption of an understatement exists only where the statistics of the production of the precious metals come from the statements based on taxes, and where the producers or exporters have an immediate interest to omit a part of the product and thereby escape taxation. In countries where there is a high export tax on the precious metals the declared export, and the production calculated from it, may well be below the actual production. On the other hand, care must be taken not to make too great a statistical allowance for frauds of this kind, as seems to have been the case in the former estimates of the large production of the precious metals in Spanish America.

Every competent person who considers the statistics of the production of the precious metals in former times, must admit that a great degree of uncertainty remains even in statements brought together with great care and conscientiousness, and with repeated checks. Many figures rest only on rough estimates, with a possibility of wide errors, and others rest simply on guesses, based upon very little and very slight evidence; but unless one gives up entirely the task of getting complete and connected statistics of the precious metals, such estimates and guesses are indispensable. It is to be hoped that renewed investigations may succeed in finding further positive statistical material in the archives. Nothing is achieved by a merely negative criticism, which sets forth at great length that all statistics of the precious metals for former times are quite arbitrary and useless. On the other hand, criticism which shows, for important estimates, the greater probability of a high or of a low figure, is so much the more welcome.

Professor Lexis says with truth that in the statistics of the precious metals estimates in place of positive statements unfortunately must always play a prominent part, but that it is nevertheless possible by care and method to prevent them from being simply guesses.

We have begun, in the present publication, with the estimates which we put forward eight years ago, with all reservations, of the production of the precious metals from 1493 to 1850; estimates which since have been reprinted in many other publications. This has been done by no means because a revision of these estimates appears superfluous, or because a change might not be possible for one or another statement or combination of statements. But for the purpose of the present work we believe that it was not only permissible, but even advisable, to repeat them without other change than resulted from the new method of reckoning the value of silver, since we still consider our former estimates as upon the whole accurate. Particular changes in matters of comparatively little note, even though they would bring us perhaps nearer to probable truth, were of no great importance for our present purpose. Moreover, up to the present time, we have seen but one careful detailed examination of our estimates for the earlier period. This is the article Contributions to the Statistics of the Precious Metals, by Professor Lexis (in the Jahrbücher für National-Oekonomie, Vol. XXXIV, page 361). We reprint here, for comparison with our statements, the results of the independent investigations of Professor Lexis, according to which the Mexican and South American production of the precious metals should be stated up to 1801 as follows:

Periods.	Gold.	Silver.
Annual average—	*Kilograms.*	*Kilograms.*
1493-1600	330, 000	13, 100, 000
1601-1700	520, 000	28, 600, 000
1701-1800	1, 570, 000	48, 500, 000

This yields a total gold product of 2,420,000 kilograms of gold, and 90,200,000 kilograms of silver, whereas our statements yield for the Mexican and South American production till the close of the eighteenth century 2,490,000 kilograms gold, and 101,400,000 kilograms silver. Our higher estimate of the American silver product arose through the fact that we took for the Peruvian mines a larger amount than Lexis considered admissible.

It is to be hoped that the Spanish and South American archives will in future give further positive data, or at least information, in regard to the earlier American production. It will then be time to undertake a thorough revision of our tables, and to replace them with new ones. For the present, and for the purpose of this publication, it seems quite useless, in view of the inevitable uncertainty of all estimates, to make changes which are comparatively unimportant in relation to the totals.

For the production of the precious metals from 1851 till 1875 we have also retained our previous figures, since there seems to be no occasion for any essential change. But it may be mentioned that our estimates, as has been already stated in our earlier larger work, stand higher almost throughout than those which, based on tables of Sir Hector Hay, are usually given in English periodicals. For the sake of completeness we give a summary comparison of both estimates for the whole period from 1851 to 1875.

TABLE C.

Producing countries.	Gold.		Silver.	
	Our estimate.	Hay's estimate.	Our estimate.	Hay's estimate.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*
United States	1, 840, 500	1, 775, 600	5, 271, 500	6, 118, 000
Australasia	1, 812, 000	1, 679, 700	....	....
Russia	694, 080	609, 100	397, 790	353, 000
Mexico and South America	231, 935	153, 400	18, 570, 500	16, 230, 000
Other countries	177, 850	91, 500	6, 763, 745	5, 675, 000
Total	4, 756, 365	4, 309, 300	31, 003, 535	28, 376, 000

The difference is to be explained principally by the fact that Sir Hector Hay puts too low an estimate on the production in South America, and leaves almost entirely out of consideration the production in countries not specifically named, which latter, all told, forms no unimportant amount. The two estimates, while differing in other respects, yet agree in that both make the proportion of the production of gold to that of silver about the same.

Variations as considerable as those that appear in the different compilations in regard to the production of the precious metals before 1875, can no longer appear for the subsequent period. Since that time, with the depreciation of silver and the uncertainty as to future standards of value, the practical interest in the statistics of the precious metals has become immensely greater.

Variations in the different estimates inevitably continue. But as a rule they are easily explained, and balance each other on the average of several years. Very meritorious work has been done since 1879 on the recent statistics of the precious metals by the Directors of the Mint of the United States. Messrs. Horatio C. Burchard and James P. Kimball have published in their annual reports a mass of information, not only in regard to their own country, but also, on the basis of consular reports, in regard to other countries.

We turn now to the statistics of the production of the precious metals since the year 1876 in the individual countries of most importance, beginning with that great country which, in this respect, has in recent years undoubtedly taken the first place, the United States. Particular attention is given to this branch of statistics in that country, especially in the annual reports upon the Statistics of the Production of the Precious Metals in the United States, published since 1881, under supervision of the Directors of the Mint. For those years for which such reports exist, statistical statements differing from them may of course be set aside. That other statements still exist is explained by the fact that immediately at the beginning of each year Mr. Valentine, the superintendent of the great express firm of Wells, Fargo & Co., prepares a preliminary statement of the production of the precious metals in the west of the United States, which is widely published, and accepted up to the appearance of the exact official statements. It seems necessary to take note of the manner in which the gold and silver product of the Union divides itself from year to year among the different States and Territories, for extraordinary changes and shiftings take place. The energy, the technical skill, and the recklessness of the persons engaged in mining and smelting, are such that productive mines are often entirely exhausted within a short space of time, and the population employed in them turns to other, often distant, mining districts.

States and Territories.	1881.		1882.		1883.		1884.	
	Gold.	Silver.	Gold.	Silver.	Gold.	Silver.	Gold.	Silver.
	Dollars.	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*
Alaska	15,000	....	150,000	....	300,000	....	200,000	....
Arizona	1,060,000	7,300,000	1,065,000	7,500,000	950,000	5,200,000	930,000	4,500,000
California	18,200,000	750,000	16,800,000	845,000	14,120,000	1,460,000	13,600,000	3,000,000
Colorado	3,300,000	17,160,000	3,360,000	16,500,000	4,100,000	17,370,000	4,250,000	16,000,000
Dakota	4,000,000	70,000	3,300,000	175,000	3,200,000	150,000	3,300,000	150,000
Georgia	125,000	....	250,000	....	199,000	1,000	137,000	....
Idaho	1,700,000	1,300,000	1,500,000	2,000,000	1,400,000	2,100,000	1,250,000	2,720,000
Montana	2,330,900	2,630,000	2,550,000	4,370,000	1,800,000	6,000,000	2,170,000	7,000,000
Nevada	2,250,000	7,060,000	2,000,000	6,750,000	2,520,000	5,430,000	3,500,000	5,600,000
New Mexico	185,000	280,000	150,000	1,800,000	280,000	2,845,000	300,000	3,000,000
North Carolina	115,000	....	190,000	25,000	167,000	3,000	157,000	3,500
Oregon	1,100,000	50,000	830,000	35,000	660,000	20,000	660,000	20,000
South Carolina	35,000	....	25,000	....	56,500	500	57,000	500
Utah	145,000	6,400,000	190,000	6,800,000	140,000	5,620,000	120,000	6,800,000
Virginia	10,000	....	15,000	....	6,000	....	2,000	....
Washington	120,000	....	120,000	....	80,000	500	85,000	1,000
Wyoming	5,000	....	5,000	....	4,000	....	6,000	....
Other States and Territories	5,000	....	....	....	17,500	....	76,000	5,000
Total	34,700,000	43,000,000	32,500,000	46,800,000	30,000,000	46,200,000	30,800,000	48,800,000

Reduced to metric weights, the production of the precious metals of the United States, as given in the statistical abstract for 1885, was as follows:

Periods and years.	Gold.	Silver.
Average of the years—	*Kilograms.*	*Kilograms.*
1851-'55	88,500	1,200
1856-'60	76,800	1,900
1861-'70	71,100	241,800
1871-'80	59,500	870,600
In the year—		
1881	52,000	1,032,000
1882	48,800	1,123,200
1883	45,000	1,108,800
1884	46,200	1,171,200

For the year 1885 the gold product has been ascertained to be $31,800,000 = 47,850 kilograms, and the silver product to be $51,600,000 = 1,241,000 kilograms.

It would obviously carry us too far to go further into the special conditions of the production of the precious metals in the United States. In regard to them reference may be made to the already mentioned comprehensive reports of the Directors of the Mint. But, in view of the extraordinary and decisive importance of this production, we can not refrain from giving extracts from general opinions put forth recently by certain careful observers. Professor Lexis, in his essay on "The Question of Standards and the Conditions of the Production of the Precious Metals" (Schmoller's Jahrbücher, X, 1, 1886), says:

> If one considers as a whole the conditions under which gold is produced in the United States, one must admit that the discovery of alluvial deposits of the extent and richness of those formerly discovered in California is no longer to be expected. Gold-washing will contribute less and less to the yearly product, even though from time to time new deposits may be found which will bring about a retardation of the rate of decrease. But this alluvial gold already forms but a comparatively small part of the total product. Much larger is the contribution which comes from the huge gravel deposits of older times, and the product from this source can undoubtedly be maintained at its present height for many decades, especially when the external difficulties are removed which have at present arisen in California from reckless hydraulic mining. The most permanent supply of gold, however, is to be expected from quartz mining; and at the same time all the indications point to a gradual and considerable rise in the product from this source. Already it is possible to use ores of low grade which formerly were not considered worth treating. It is endeavored more particularly by better metallurgy to get rid of the loss which so far has arisen through th- fact that the gold contained in iron pyrites, the so-called *rusty* gold, can not be secured. It may therefore be assumed that the production of gold in the United State- has at the present time reached a point at which it will maintain itself on the average for many years, and that the annual yield during the next generation is hardly-likely to be less than 110,220,000 marks.

In regard to the production of silver in the United States, it is said in the same essay.

> The official reports make it evident that the richness of the Pacific States and Territories in silver is practically inexhaustible; that it depends only on the development of the railroad system, on the progress of technical art, and on the application of labor and capital, how far the annual product shall be increased. The effect of the low price of silver is chiefly this, that many low-grade ores are not now treated, but are piled up in the hope of the discovery of cheaper methods of treating them or of higher prices of silver. New deposits are constantly discovered, which yield a profit even at the present price of silver and more than fill out the gaps in other places. The American reports note especially the increasing importance which California has gained as a producer of silver, through the discoveries in San Bernardino county.

Interest will also be taken in an essay by Dr. E. Reyer, which appeared in the January number for 1886 of the Zeitschrift für Berg-, Hütten- und Salinen-Wesen im Preussischen Staate, under the title of "Gold Mining in California," in which the economic side of the matter is considered. The author has personally studied the situation in California. We quote his concluding sentences:

> If we compare the total production of gold in California with the number of workmen, we get interesting results. In the beginning of the decade 1850–'60, from 60,000 to 100,000 men were employed in the mines and washings of California. One man produced annually no more than between 2,000 and 4,000 marks, which meant, at daily wages between 16 to 32 marks, a large deficit. In the middle of the decade, from 1860–'70, 43,000 men were employed (of whom 7,000 were employed in quartz mining), and all together produced only 100,000,000 marks of gold. Quartz mining yielded at that time nearly 4,000 marks per year per man, the washings correspondingly less, with daily wages of from 10 to 12 marks. Again there was an industrial loss.
>
> These facts correspond with the statements as to dividends, from which it appears that of several hundred quartz mines hardly a dozen are profitable. In the washings matters are no better; even though the dividends in particular cases are large, they

> by no means cover the deficit of all the unprofitable undertakings. In fact, the production of gold here, as in Australia, has always yielded a net loss. This may be explained as follows. A few dozen mines produce the great mass of gold. They make large profits and determine the price. Their success attracts capital without end to similar undertakings; these are given up after a while, and the money is returned to other really productive branches of industry. But the temptation from the fortunate gold producers continues, and causes new capital constantly to rush to its destruction—the same phenomenon that is seen in games of chance. A few win a great deal; hundreds lose all they have. The business, on the whole, is a losing one. Everybody knows it, yet every one stakes his venture in the hope of winning the great prize. For that reason the production of gold throughout the world has always been, on the whole, unprofitable, and gold has been an article which was sold below cost price. This state of things will continue so long as the production of gold is not regulated by the state, or entirely carried on by the state, at least in the most important producing countries. The total production of gold in California maintained itself in the years after 1850, as a rule, at 200,000,000 marks per year. In the beginning of the sixties it fell rapidly to 100,000,000 marks, and in recent times to less than 50,000,000 marks. In the first years the gold was gained almost entirely out of ordinary washings. In the beginning of the fifties a production from quartz appeared of from 40,000,000 to 60,000,000 marks. Later, the great mass of gold was obtained by hydraulic mining. The production of the seventies has been obtained about half from washings and half from mines.
>
> The decreasing gold production of California was supplemented in the sixties by that of other American States (Comstock, etc.). In recent times these sources also are being rapidly exhausted. Here, as in Australia, the production of gold is marked by a lack of permanence. This has always been the case, and is explained by the easy exhaustion of the alluvial deposits, and the small depth at which veins are profitable. In other countries, the same phenomenon has shown itself in previous centuries, but under the conditions of earlier times, when methods were more primitive, there was a longer period before exhaustion set in. In this respect gold differs essentially from the less exhaustible silver.

It is apparent from these quotations how much the views of attentive observers differ as to the continuance of an abundant supply of gold, and how difficult it is to secure a correct opinion. The final result must turn on the discovery of new and rich gold fields, and on the progress of mining skill.

In regard to the production of gold in Australasia, by which name we designate, following the example of the English, Australia itself (comprising the colonies of New South Wales, Victoria, Queensland, and West Australia), Tasmania, and New Zealand, different statements vary very much for the different years. Not unfrequently the gold production, as stated by the mining authorities for various years, is later admitted to be incorrect, and other figures are substituted. If, however, these corrections are taken into account and the averages of several years are taken, the variations in the main balance each other.

The total declared export of gold from Australia, deducting the intercolonial export, was as follows:

Year.	Amount.		Year.	Amount.	
		Kilograms.			*Kilograms.*
1876	£5,793,374	42,400	1880	£4,170,749	30,500
1877	7,295,868	53,400	1881	6,461,388	47,800
1878	5,567,084	40,800	1882	5,087,625	37,300
1879	2,403,212	17,600	1883	5,180,741	37,900

The total for the eight years from 1876 to 1883 was £41,960,000, equal to 307,200 kilograms, an average of 38,400 kilograms per year. To this amount some addition must be made on account of the gold retained for local use, before we could estimate the total gold product of the Australian colonies. In the years from 1856 to 1860 the corresponding gold export from Australia was on the average £11,424,000, equal to about 83,000 kilograms.

The preceding data we have repeated in order to show in what manner the statements, in the first edition, of the gold product in Australia were made up. We are now, however, in a position to give a full statement of this production since 1851, that is, from the beginning of the production of gold up to 1884, inclusive. This statement is entitled to take the place of previous calculations and estimates. In the sixteenth annual report, for the year 1885, of the British master of the mint, there is an Appendix E, entitled "Estimated production of gold and silver in Australia and New Zealand from the earliest records obtainable to the year 1884, inclusive. Tabulated from returns kindly furnished by the Government of each colony." This statement was prepared by the master of the mint at Melbourne, Mr. George Anderson, and was sent with the letter of introduction to the master of the mint at London, Mr. C. W. Freemantle, on the 9th of March, 1885. In the original table there is a column for the colony of West Australia, but no figures are given in that column, it being remarked that the production there is nominal. For this reason we have omitted the column. According to this statement the production was as follows:

Gold production in Australasia.

Year.	New South Wales.	New Zealand.	Queensland.	South Australia.	Tasmania.	Victoria.	Total.	
	Ounces.	*Ounces.*	*Ounces.*	*Ounces.*	*Ounces.*	*Ounces.*	*Ounces.*	*Kilos.*
1851	144,120					212,899	357,019	10,179
1852	818,751					2,286,535	3,105,286	88,532
1853	548,052					2,744,098	3,292,150	93,859
1854	237,910					2,218,483	2,456,393	70,032
1855	171,367					2,819,288	2,990,655	85,264
1856	184,600					3,053,744	3,238,344	92,325
1857	175,949	10,437				2,830,213	3,016,599	86,003
1858	286,798	13,534				2,596,231	2,896,563	82,581
1859	329,363	7,336				2,348,703	2,685,402	76,561
1860	384,053	4,538				2,224,069	2,612,660	74,487
1861	465,685	194,031	(50,000)			2,035,173	2,744,889	78,257
1862	640,622	410,862	(50,000)			1,730,201	2,831,685	80,731
1863	466,111	628,450	(100,000)			1,694,819	2,889,380	82,376
1864	340,267	480,171	(100,000)			1,622,447	2,542,885	72,498
1865	320,316	574,574	(100,000)			1,611,554	2,606,444	74,310
1866	290,014	735,376	(150,000)		348	1,546,948	2,722,686	77,624
1867	271,886	686,905	(150,000)		1,363	1,501,446	2,611,600	74,457
1868	255,662	637,474	(150,000)		692	1,684,918	2,728,746	77,707
1869	251,491	614,281	(150,000)		137	1,544,756	2,560,665	73,004
1870	240,858	544,880	(180,000)		964	1,304,304	2,271,006	64,746
1871	323,609	730,029	(180,000)		6,005	1,368,942	2,608,585	74,371
1872	425,129	445,370	(180,000)	2,494	6,969	1,331,377	2,391,339	68,177
1873	361,784	505,337	(200,000)	98	4,661	1,170,397	2,242,277	63,927
1874	270,823	376,388	(200,000)	8,351	4,650	1,097,643	1,957,855	55,819
1875	230,883	355,322	(200,000)	13,742	3,010	1,068,417	1,871,374	53,353
1876	167,412	322,016	(250,000)	9,857	11,107	963,760	1,724,152	49,156
1877	124,111	371,685	(256,916)	11,811	5,777	809,653	1,579,953	45,045
1878	119,665	310,486	310,247	10,745	25,249	758,040	1,534,432	43,747
1879	109,650	287,464	288,556	14,250	60,155	758,947	1,519,022	43,307
1880	118,600	305,248	267,136	13,245	52,595	829,121	1,585,945	45,215
1881	149,627	270,561	270,945	16,975	56,693	833,378	1,598,179	45,564
1882	140,469	251,204	224,893	15,668	49,122	864,610	1,545,966	44,075
1883	123,806	248,374	212,783	15,938	46,577	780,253	1,427,731	40,705
1884	107,199	229,946	307,804	21,454	42,339	778,618	1,487,360	42,405
Total	9,596,642	10,552,279	4,529,280	154,628	378,413	53,023,985	78,235,227	2,230,489

Professor Lexis estimates the yield of gold in Australia (apart from the production in North Australia) as follows:

Year.	Ounces.	Marks.
1882	1,566,757	125,341,000
1883	1,446,930	115,754,000
1884	1,507,283	120,583,000

He adds:

> From 500,000 to 550,000 ounces are now produced from alluvial deposits, and between 950,000 and 1,000,000 ounces from quartz mines. In the first class the official statistics place hydraulic and other mines in the older deposits, which are likely to become more numerous in the future and to yield for a period without visible limit a considerable amount of gold. In the same way quartz mining is capable of increasing development, as the settlement of the country progresses and the normal growth of population and the increase of railroads takes place. Metallurgic improvements will, moreover, render it possible to secure from the ores a considerably higher per cent. of gold than was formerly possible. It is, therefore, not optimistic if an annual production of from 100,000,000 to 110,000,000 marks is expected from the Australian mines.

For the year 1885 complete reports of the production of gold in Australasia are not yet at hand. In Victoria the production, according to official reports, was 735,218 ounces, against 778,617 ounces in the year 1884; but this decrease may be covered by an increased yield in Queensland. Here, for instance, the gold field of Charters Towers yielded in 1885 134,650 ounces, as against 106,286 ounces in 1884, and, as the other reports from this colony are also favorable, we may estimate the gold production in Queensland for 1885 at about 340,000 ounces.

New gold fields have been recently discovered in West Australia, at Kimberley, in the northwestern part of the colony, which are said to be rich in alluvial gold. For the present they are not easily accessible, and up to date (August, 1886) no considerable yield from them has been secured.

There has been practically no production of silver in Australia up to the present. What silver has been obtained there has been derived by separation from gold. Mr. Anderson, in the report mentioned above, has given separate figures for the production of silver since 1863 in New South Wales, Victoria, and New Zealand, of which the totals are as follows:

	Ounces.
1863–1870	81,159
1871–1875	597,712
1876–1880	562,020
1881	97,096
1882	64,655
1883	116,012
1884	145,644

On the average of the four years, 1881–1884, this production of silver has been only 105,852 ounces per year, equal to about 3,000 kilograms fine. In the years 1883 and 1884 there were exported from Queensland silver and lead of the value of £101,519. The mining of silver in Queensland, as well as in New South Wales, seems to have begun on a larger scale only in 1885–1886, at Silver Fields, in North Queensland, at Sunny Corners, Silverton, in the Barrier Ranges, etc. Whether the large expectations entertained in regard to these new silver mines will be realized, remains to be seen.

It must, in conclusion, be said that the Chinese employed in the alluvial mines, especially in Queensland, carry to China a large part of the gold gained by them without declaring it. This was formerly the case in California also. How large this exportation of gold by the Chinese may be, is difficult to estimate; but it is certain that it does not appear in the official statistics, and that the sum total can not be inconsiderable.

In regard to the production of gold in Russia, it is not to be expected that exact statements, corresponding with each other, should exist, even if we look aside from the amounts fraudulently withheld from publication. The gold producers in Russia have always been obliged to turn over the gold produced by them to the authorities at fixed prices. For some time these purchases have been met by bills drawn at six months date on the Imperial mint at St. Petersburg. On the whole, there is, in essentials, an agreement between the different official statements of the yield of gold in Russia. But if the figures for individual years are considered, more or less considerable discrepancies appear. All statements are said to rest on the official data. The differences may in part be explained by the fact that some statements refer to gold fine, that others refer to standard gold ($\frac{11}{12}$ fine), while still others refer to the so-called "Schlich-gold," or "Legatur" gold, such as is turned in by the producers.

Below we give, first, the statements in regard to the earlier developments of Russian gold production, which J. Von Bock published in his statement of Russian production for the seven quinquennial periods between 1815 and 1849. Then, for the individual years from 1850 to 1871, we give the figures of Professor Lexis, in his essay on the precious metals in the foreign trade of Russia, printed in the Tübinger Zeitschrift für die Gesammte Staatswissenschaft, 1878. Lastly, for the years from 1872 to 1875, we give the official statements as sent to us direct from St. Petersburg:

Years.	Pud.	Pounds.
Average of—		
1815–1819	15	32
1820–1824	82	21
1825–1829	266	9
1830–1834	373	26
1835–1839	443	12
1840–1844	926	37
1845–1849	1,589	31
Years:		
1850	1,454	....
1851	1,474	....
1852	1,367	....
1853	1,463	....
1854	1,596	....
1855	1,649	....
1856	1,655	....
1857	1,734	....
1858	1,688	....
1859	1,542	....
1860	1,491	....
1861	1,456	....
1862	1,461	....
1863	1,460	....
1864	1,398	....
1865	1,576	....
1866	1,659	....
1867	1,650	....
1868	1,711	....
1869	2,007	....
1870	2,157	....
1871	2,400	....
1872	2,308	9
1873	2,024	39
1874	2,028	5
1875	1,906	7

Based on these, and on certain other statements, was the following estimate, already published by us in earlier writings, of the gold production of Russia from 1801 to 1875:

Years.	Kilograms.	Marks.
1801-1810	165	460,000
1811-1820	315	879,000
1821-1830	3,375	9,416,000
1831-1840	7,050	19,669,000
1841-1850	22,515	62,817,000
1851-1855	24,730	68,997,000
1856-1860	26,570	74,130,000
1861-1865	24,085	67,197,000
1866-1870	30,050	83,839,000
1871-1875	33,380	93,180,000

There seems to be no reasons for attempting to change these estimates; but it should be said that the production of gold in Russia was probably considerably larger than indicated by the official statements, especially in earlier times, when there was a not inconsiderable tax on the gold produced on private account.

Our estimate of the Russian gold production from 1876 to 1885 has already been given above in our general table. We add at this point only such other official statements as have come to hand. In the Russian Review, 1883, the yield of gold in Russia for the years 1876 to 1881 is given as follows by Striedter:

Year.	Pud.	Pounds.	Solotnik.	Kilograms.
1876	2,054	8	48	33,649
1877	2,502	6	57	40,986
1878	2,572	4	33	42,132
1879	2,631	29	53	43,109
1880	2,641	29	91	43,272

In the Statistical and other Scientific Contributions from Russia, fifteenth year, 1882, K. Skalkowsky mentions that at the close of 1879 the number of private gold mines in eastern Siberia was 1,522, in western Siberia 291, in the Ural 1,233. The yield of chemically pure gold was 2,514 pud, 61 solotnik, 38 doli. According to this statement, and a statement for the same sources giving the yield of Schlich-gold as 2,631 pud 30 pounds, the fineness of the latter gold may be assumed at 0.955.

In the annual reports of the director of the mint of the United States the gold production of Russia is given as follows, official data being cited as authority here also:

Year.	Dollars.	Kilograms, fine.
1876	22,362,309	33,650
1877	27,240,081	41,000
1878	28,000,624	42,100
1879	28,650,449	43,100
1880	28,759,860	43,300
1881	24,431,048	36,800
1882	23,867,935	35,912
1884	*2,009 †10	32,912

* Pud. † Pounds.

Lastly, Mr. Ottomar Haupt, in his Monetary History of our Times, Paris, 1886, has given the following statement, again based on official statements made to him from St. Petersburg. Quantities indicate gold fine:

Year.	Pud, fine.	Rubles.
1868	1,685	22,320,000
1869	1,542	21,056,000
1870	1,957	26,711,000
1871	2,187	29,872,000
1872	2,127	29,083,000
1873	2,090	28,546,000
1874	1,799	24,562,000
1875	1,889	25,792,000
1876	2,602	35,538,000
1877	2,249	30,716,000
1878	2,329	31,799,000
1879	2,319	81,674,000
1880	2,355	32,163,000
1881	1,052	14,374,000
1882	1,239	16,919,000
1883	1,796	24,523,000
1884	2,350	32,000,000
1885	2,327	31,700,000

In this last table there are remarkable sudden variations of great amount, in successive years, as for instance in the years 1881 and 1882. Looking at the previous five years, we can hardly believe that such extraordinary changes took place in the actual production of gold, and the variations in the figures are probably to be explained by the fact that the delivery and recording of quantities of gold were occasionally delayed, and carried on to a later year. In the other statement of Russian gold production these variations do not appear. Possibly the discrepancies may rest on the circumstance that some statements are for calendar years, others for fiscal years. Occasionally we find figures that are quite inexplicable. Thus it is said in an essay by Mr. Ivanow, published in the Journal de St. Petersburg and reprinted in the Journal des Économistes for September, 1883, at page 414: "The production of gold in Russia in the year 1882 gives to our country the first place after the United States, putting it before Australia. We extracted in 1882 57,000,000 rubles gold, while Australia extracted no more than 50,000,000." The official figures communicated to Mr. Haupt from St. Petersburg give the gold production for 1881 at 14,374,000 rubles, only a quarter of this estimate in the Journal de St. Petersburg. The sum of 57,000,000 rubles gold is equivalent to 66,000 kilograms fine, which is double the quantity given in our general table as the presumable actual production of gold in Russia for 1882. Notwithstanding incomprehensible exaggerations of this kind, the above-cited essay by Mr. Ivanow has many sound and noteworthy remarks, especially in what he says of the insufficient plant, the primitive machinery, and the reckless methods, of the smaller mining companies of Siberia, and also in what he says about the widespread frauds in the delivery of the gold. Under a better system Siberia would probably yield for a long time in the future a great deal of gold, without there being any danger of exhaustion of the gold fields. But, as already has been noted, the variations in the different statistical statements are not of decisive importance if periods of several years be considered.

In regard to the character and future of the Russian production of gold, opinions vary greatly. As has been pointed out, it is carried on with poor technical means, little capital is employed on a large scale, and the condition of the workmen is abominable. Criminals and vagabonds form the bulk of the men employed in the washings, and theft and embezzlement constantly occur. If these evils were remedied, the production of gold in Russia might increase considerably. Striedter, in the Russian Review for 1883, Nos. 8 and 9, states that by far the largest part of the Russian production is carried on by washing in sand deposits, and that comparatively little true mining is carried on. The increase of the Russian gold production is to be explained by the fact that new fields are constantly hunted up, since the yield of gold from the sand and gravel deposits, originally high, diminishes everywhere, except in the district of Olekminsk. It has been necessary to push constantly farther eastward. During the decade from 1851 to 1860 eastern Siberia yielded two-thirds of the total Russian product of gold, and since 1871 this proportion has still further risen. In recent years attention has been directed to new fields in the Amur district; but there the limit of new discoveries would be reached. Striedter concludes that the increase of gold production which arose from the sand deposits of Russia will before long have reached its highest point. On the other hand, it has been said that although a continuous increase in the Russian gold production is not to be expected, on the other hand increasing knowledge of the geological conditions of Siberia and the Amur country, and improvement of industrial conditions, especially in the means of communication and in technical apparatus, may lead to a profitable production of gold for many years in the future, the more so if production in the future is carried on more by true mining.

An English traveler, Mr. H. Lansdell, in his Journey through Siberia, 1882, says:

> The yield of gold in some valleys in Amur is almost fabulous. In Albazin, which belongs to the upper Amur Company, I was told that in the ten years from 1869 to 1878 there had been produced 150 pud gold per year, which, at the rate of £2,000 per pud, gives a total sum of £3,000,000. On the river Vitim between 300 and 400 pud were produced in the summer of 1878. In eastern Siberia, in the years from 1833 to 1870, the exportation of gold was about 30,000 pud, whose production employed in some years more than 30,000 workmen.

Since 1881 Russian fugitives have opened a new and rich yield of gold in the Chinese Amur country, in the neighborhood of the station Amasarsk, on the river Sheltuga. In the first year 500 men were at work here; in the second year there were already 3,000. The year 1883, when 7,000 persons were at work in the new gold fields, was the culminating time; since then the number has gone down again to 3,000. The gold fields are about 7 werst square. The sand containing the gold is very carelessly washed, and from 100 pud sand from 2 to 10 solotnik gold are obtained. Most of the men net nothing, since all articles of food are extraordinarily dear. In former times the Crown bought gold through its officers, at the rate of 3 rubles 40 copecs per solotnik. But this was soon discontinued, as the officers made profitable contracts with the Chinese and turned over very little gold to the Crown. The recent increase in the export of gold from Chinese ports (3,186,461 Shanghai taels in 1885) is probably connected with the production of gold in the Amur country.

Professor Lexis, who has for some time given special attention to the Russian production of the precious metals, is of the opinion (see Schmoller's Jahrb., X, 1, 1886) that "Russia for a number of decades will continue to add on the average 60,000,000 to 70,000,000 marks annually to the gold product of the world."

In regard to the production of silver in Russia, for which separate statistics are generally given in connection with the statistics of gold, we have inserted no figures, since the production of that metal in Russia, as compared with the total production, has always been quite insig nificant. In the years from 1876 till 1884 the annual average production of silver in Russia was less than 12,000 kilograms.

As regards Mexico, the estimates of the production of the precious metals have been based from the outset on the coinage of that country. But it has always been known that the actual production must have been considerably in excess of the sums indicated in this way, since there has been a secret export of uncoined precious metals and a consumption within Mexico in the arts. From time to time exportation in bars has been permitted by law, of which the amount has then been recorded. The coinage has been in the fiscal years ending June 30, as follows:

Years ending June 30—	Silver.		Gold.	
	Pesos.	*Kilograms, fine.*	*Pesos.*	*Kilograms, fine.*
Average of—				
1868–1875	17, 552, 000	428, 800	850, 700	1, 259
1876	19, 454, 054	475, 300	809, 402	1, 198
1877	21, 415, 128	523, 200	695, 750	1, 030
1878	22, 084, 203	539, 000	691, 098	1, 024
1879	22, 162, 987	541, 500	658, 206	974
1880	24, 018, 529	586, 800	521, 826	772
1881	24, 617, 394	601, 500	492, 068	728
1882	25, 146, 261	614, 400	452, 590	670
1883	24, 083, 922	588, 400	407, 600	603
1884	25, 377, 378	620, 000	328, 698	487
1885	25, 840, 725	631, 400	423, 000	626

According to the official statements, based on the mint records, the total coinage in Mexican mints during the three hundred and forty-nine years from 1537 till the close of June, 1885, amounted to:

	Pesos.	Kilograms, fine.
Silver	3, 090, 338, 595	75, 506, 200
Gold	119, 915, 525	177, 484

The actual production of the precious metals in Mexico is, as already remarked, much larger than this amount. In these statistics no account is taken of the quantities of gold and silver which are exported in bars without being declared at the custom-houses or elsewhere. Such an export has more particularly taken place from the ports on the western coast. The export duties, 5 per cent. for silver and one-half per cent. for gold, were not removed until November 1, 1882. In recent times a considerable export, not declared, is said to take place over the northern boundary. An addition must be made for all this export not reckoned in the official statistics, and moreover a greater addition for gold than for silver. A difficulty also arises in inserting the Mexican production in general tables, from the fact that in Mexico the coinage and the export are given for fiscal years instead of calendar years. This may serve to explain many divergencies in different years. In a report of the Mexican ministry of trade of the 18th of August, 1880, there is given, by way of exception, a statement of the production and coinage for the calendar year 1875, as follows:

	Ascertained production.		Coinage.	
	Pesos.	*Kilograms.*	*Pesos.*	*Kilograms.*
Gold	989, 161	1, 464	589, 161	872
Silver	25, 167, 763	615, 300	23, 667, 763	578, 700

For the fiscal year 1884 the ascertained production (coinage and export of bars) is given at 31,548,478 pesos silver and 1,183,137 pesos gold.

The declared export of precious metals of domestic production from Mexico was as follows:

	1881-1882.	1882-1883.	1883-1884.
	Pesos.	*Pesos.*	*Pesos.*
Gold in bars	420,131	548,039	696,653
Gold in coins	760,683	331,708	200,816
Total	1,180,814	879,747	897,469
Silver in bars	3,040,079	4,773,928	5,311,310
Silver in coins	16,783,317	22,969,584	25,999,876
Total	19,823,396	27,743,512	31,311,186

We cannot add to the silver production of different countries the silver ores exported from them, since, as has already been stated, the quantities of gold or silver obtained in this manner are reckoned as part of the production of those countries where the ores are treated.

If the production of the precious metals in Mexico has maintained itself, and even increased somewhat, this is to be ascribed, apart from the effect of new railroads and of the greater cheapness of quicksilver, chiefly to the greater energy with which mining has been taken up. In a German consular report of 1882 it is said:

> In the northern border States mining for the precious metals in the rich Mexican Cordilleras attracts numerous speculators, and an immigration of labor and capital (and of adventurers, too) is taking place on a scale that reminds one of the history of California and Nevada. In Sonora almost all the profitable mines have gone into the hands of American companies. This movement is now spreading to the States of Sinaloa, Chihuahua, and Durango. Every mine owner is on the watch for an American company which is to buy him out.

In the report of the German consul in Oaxaca for the year 1885 it is said:

> Several large undertakings in different mining districts have brought about, for the year 1884, an increase in the production of silver of about 20 per cent. as compared with previous years. The governments here have endeavored to attract foreign capital by special privileges to this industry. These endeavors, however, have had little success in face of the present unfavorable state of the money market. By far the greater part of the numerous and productive gold and silver mines are abandoned, partly from a lack of enterprise and of the necessary machinery, partly because of the incomplete and primitive methods, which prevent a profitable handling of poorer ores.

The yearly reports of the Director of the Mint at Washington estimate the production of the precious metals in Mexico as follows:

Years.	Silver.	Gold.
	Kilograms.	*Kilograms.*
1878	650,000	1,500
1879	605,469	1,488
1881	665,918	1,292
1882	703,508	1,409
1883	711,347	1,438
1884	655,868	1,780

Our estimate of the Mexican production of the precious metals is the result of a revision of earlier statements, with use of further material, and it varies considerably from our former statements for individual years. Our estimates since 1878 are higher than those of Burchard.

The depreciation of silver, which is most felt in Mexico, since silver is Mexico's chief article of export, has not as yet brought about, on the whole, any diminution in the production of silver. The great improvements in transportation and in methods of production in recent times have made production more easy. The fall in the price of silver is said sometimes to cause even an increase of production, since the mine holders endeavor to make up for the lower price by producing larger quantities.

We print below statements in regard to the production of the precious metals in the United States of Colombia (formerly called New Granada). We are enabled to make these statements through the kindness of the Secretary of State for Foreign Affairs, Mr. Vincente Restrepo, who has given this subject his attention for twenty-eight years, and has recently published a comprehensive study on it, entitled A Study on the Gold and Silver Mines of Colombia, printed in the Annals of Public Instruction of the United States of Colombia, No. 39, March, 1884.

Restrepo estimates the total production of the precious metals in Colombia since its conquest, 1537, up to the year 1882, as follows:

Years.	Pesos.	Of which gold, kilograms.
1537–1600	50, 000, 000	69, 600
1601–1700	170, 000, 000	236, 600
1701–1800	194, 000, 000	270, 000
1801–1882	216, 000, 000	300, 600
1537–1882	630, 000, 000	876, 800

Of this total there were, approximately, 602,000,000 pesos gold and 28,000,000 pesos silver. This production was divided among the different provinces as follows:

Province.	Pesos.	Province.	Pesos.
Antioquia	252, 000, 000	Santander	13, 000, 000
Cauca	242, 000, 000	Bolivar	6, 000, 000
Panama	74, 000, 000	Cundinamarca	2, 500, 000
Tolima	40, 000, 000	Boyacá y Magdalena	500, 000

Mr. Restrepo believes that the estimate of the production of gold in Colombia, as given in our volume on the Production of the Precious Metals, Gotha, 1879, was too high; on the other hand, he considers Humboldt's estimate (up to 1803) too low.

Since 1851 the production of the precious metals has averaged as follows per year:

Years.	Pesos.	Kilograms, gold (about).
1851–1860	2, 532, 555	3, 500
1860–1863	2, 101, 000	2, 900
1863–1869	2, 615, 000	3, 600
1869–1881	3, 198, 000	4, 500
1881–1882	4, 316, 000	6, 000

The customs statements of the exportation of gold and silver from the ports of Colombia are arranged, it is true, in seven separate columns, but the individual statements for different years run into each other so much and make it so impossible to see any system in the classification, that we have not been able to make use of it for statistical purposes. We are therefore compelled to limit ourselves to a presentation of the total declared export of the precious metals. From this it is possible, however, to reach conclusions in regard to the changes in export and production which have taken place from year to year.

Declared export of precious metals from Colombia.

Fiscal years.	Pesos.	Fiscal years.	Pesos.
1869–1870	2,067,314	1879–1880	2,794,505
1870–1871	1,890,674	1880–1881	2,874,913
1871–1872	1,281,948	1881–1882	3,351,730
1872–1873	2,643,708	1882–1883	3,735,476
1873–1874	3,095,676	1883–1884	3,935,236
1874–1875	3,160,185	Average of the years:	
1875–1876	3,295,098	1869–1870 to 1873–1874	2,197,064
1876–1877	1,796,401	1874–1875 to 1878–1879	3,080,250
1877–1878	3,688,246	1879–1880 to 1883–1884	3,338,372
1878–1879	3,461,321		

In a letter of 29th of April, 1886, which accompanies these figures, attention is called to the fact that they are not sufficiently clear in their arrangement, and that they are moreover incomplete, since that gold which is gained (though not in considerable quantity) in Panama, as well as in Choco and Barbacoas, is not indicated by the customs figures. During the fiscal year 1884–'85 the production of the precious metals probably decreased about 20 per cent. because of the civil war then prevailing.

That part of Colombia which lies between the Pacific ocean and the river Magdalena, or the central Cordillera chain, and between the first and ninth degree of latitude, containing an area of about 250,000 square kilometers, is extraordinarily rich in gold. It contains, moreover, treasures of silver ores, and of platinum-bearing alluvium. A great increase of the Colombian production of the precious metals may therefore be expected as soon as use is made of modern methods, and especially of chemical methods, which hitherto have been used to but a slight extent. As much as 50 per cent. of the gold and silver is said to be lost at present. It is added:

> A number of English companies are carrying on quartz mining with more or less success. The Tolima Company and the Frontino and Bolivia Companies pay satisfactory dividends. The Organos Company and the Orita Company still maintain hopes of success. According to all the indications we may expect for the future an annual gold product of about 3,000,000 pesos from Colombia.

The German traveler Thieleman, who took a look some years ago at the gold washings on the coast of Colombia, mentions that they are worked almost entirely by negroes, who produce no more than their very simple subsistence requires. He reported the annual product of the gold washings at about 2,500,000 pesos.

In a report of the legation of the United States in Bogota the yield for the year 1882 is estimated somewhat higher, namely, at 3,856,000 pesos gold, and 756,000 pesos silver.

In the yearly reports of the American Director of the Mint the production of gold in Colombia was formerly put at only 3,500 kilograms, but for 1881 it is given at 6,019 kilograms, and for 1882 at 5,802 kilograms.

From a communication from Professor Lexis we take the following statements:

> The yearly yield of the precious metals in Colombia, which was from 1863 to 1869 only $2,615,000, reached from 1869 to 1881 $3,198,000, and amounted in 1882 to $4,317,000, of which $3,566,000 was gold or gold-yielding silver.

In 1885 the revolutionary movements checked production, which, however, is likely in the future to reach its former extension. If we were to make an estimate for 1886 from the monthly notices which appear here and there in the London Mining Journal, there would result for the Frontino and Bolivia Gold Mining Company about 15,000 ounces; for the Organos Company, 3,200 ounces; the Orita Company, 1,000 ounces; the Colombia Hydraulic Company, 800 ounces. The Tolima Company produced between 90,000 and 100,000 pesos gold-yielding silver. In the smelting works of Sabaletas there were produced from the ores of the Sancudo mine about 300,000 pesos silver, containing 6 to 8 per cent. of gold. The silver mines of the district Marmato yield annually 480,000 pesos silver, with about one-half per cent. gold. The sand of all the rivers contains gold, especially that of the Cauca river. Hitherto this gold has been washed by the natives in the most primitive manner, with a monthly yield in the dry season of about 5,000 pesos. This gold contains 24 to 33 per cent. of its own weight in silver. The most gold comes from the gold mines of the Marmato district, which have been worked for more than a century, and have yet given no signs of exhaustion. The Western Andes Company, producing silver, declared in 1885 dividends of £6,043.

All appearances indicate that the production of the precious metals in Colombia will show an increase rather than a diminution, so soon as their working is better carried on.

The production which in recent times has developed itself in the Venezuelan province of Guiana, as well as in French and in Dutch Guiana, has hitherto received too little attention. We take the following notice from the reports from Caracas in the German Handelsarchiv. The declared export of gold from Guiana is estimated for the period from 1867 to the close of 1883 at 1,292,594 ounces, and was in value more than 120,000,000 Bolivares (francs). In the single years the export was:

	Ounces.
1876	86,530
1877	100,989
1878	95,205
1879	107,723
1880	116,799
1881	111,778
1882	125.548
1883	168,443

By far the greatest part of the Venezuelan production of gold comes from the Callao mine. This mine yielded in the year 1881 alone 72,255 ounces of gold from 24,978 tons of rock, having a value of nearly 7,000,000 Bolivares. It divided in dividends 1,800,000 Bolivares. In 1882 there were produced 22,405 tons of rock, yielding 105,400 ounces of gold, with a value of 10,150,000 Bolivares. In the year 1885 this same mine yielded nearly 11,000,000 Bolivares (equal to 3,184 kilograms fine) of gold, there being on the average 2.42 ounces to the ton of rock; and 4,572,000 Bolivares were divided as dividends. The total gross product from 1871 to 1885 amounted to 25,400 kilograms fine, or 87,688,953 Bolivares.

The other mining concerns of Venezuela produce at a loss, so far as is known, yet produce a considerable quantity of gold, and do not give up hopes of better results. In the year 1885 the New Chili mine produced 25,000 ounces of gold out of 30,000 tons of quartz. The gross product of the New Potosi mine was 4,600 ounces, against 8,650 ounces in the year 1884. On the whole, Professor Lexis is of the opinion that the gold product of Venezuela for 1884 and 1885 may be put at 5,500 kilograms per year. Since much gold is exported from Venezuela without being declared, and since there is a considerable product of gold in French and Dutch Guiana, the total gold product in recent years in Guiana may be accepted as exceeding 6,000 kilograms per year.

In the Mining Statistics of France for 1881 a production of gold of 1,875.5 kilograms, with a value of 6,549,100 francs, is mentioned, which must refer to the production of French Guiana. A consular report from Cayenne estimates that as early as 1876 the export of gold was 1,858 kilograms. The export of gold from Surinam, according to the customs records, amounted in 1884 to £108,808 in value, and in 1885 to £110,981. It is supposed that in addition 5 to 10 per cent. of these amounts were exported secretly in order to escape the export duty.

There is unfortunately great uncertainty as to the production of the precious metals in Peru, Bolivia, and Chili, and there are consequently great differences in the estimates for these countries. From the years from 1871 to 1875 we had estimated their product at about 4,480 kilograms gold, and 374,700 kilograms silver, and had assumed for subsequent years the same amount. Great interest attaches to good estimates, and even to any partial specific data which give us something to start with.

A consular report from Lima for 1878 estimated the total product of silver in Peru alone at 345,000 marks (nearly 80,000 kilograms).

According to the reports of the Director of the Mining School at Lima, the silver smelted in Peru in the year 1884 amounted to 50,333 kilograms, of which receipts at the Lima mint formed 43,420 kilograms, and 6,912 kilograms were exported in bars.

According to the official report in the Boletin de Minas, Lima, July 24, 1886, the production of silver in Peru was in 1884 about 72,700 kilograms fine, and in 1885, 84,000 kilograms fine. In both these sums it should be said that the silver supposed to be contained in exported ores is included.

The silver production in Cerro de Pasco, the most important point of production, was:

	Kilograms.
1879	38,913
1880	32,500
1881	24,210
1882	24,026
1883	27,561
1884	28,957

In a report of the German consulate in Cochambamba for the year 1879 it is estimated that the silver production of Bolivia, exclusive of the coast region, is 600,000 marcos (138,050 kilograms) annually. In the report for 1881 it is said:

> The mining of silver steadily increases. The mines have all struck good rich ores, and show a considerable product. The larger companies are said even to divide 50 per cent. dividends. These favorable results have encouraged a formation of a number of new companies for working with a sufficient capital abandoned mines, as well as for the discovery of new mines. A profitable future is prophesied for these new undertakings.

This view is confirmed in a report of the American embassy from La Paz of February 20, 1884. In this report it is said that in the year 1882 there was exported from Bolivia silver, coined and uncoined, to the value of 20,000,000 Bolivares, equal to about 450,000 kilograms of fine silver. The Government had farmed the tax on silver mines, and therefore it was the interest of the farmers and of the producers to understate the produce of the mines as much as possible. Inquiries from persons interested in silver mines and qualified to judge indicated that the product of the Peruvian mines for 1883 was to be estimated at 15,900,000 ounces (460,000 kilograms). The use of new machines and methods would still further increase this product.

In regard to the production of the precious metals in Chili the following information was given by the Government of Chili in answer to questions put by the embassy of the United States. It was said that, as no statistics were at hand giving an exact answer to the question, information could be given only in regard to what was bought by the mint and what was declared for export. From these data some conclusion could be reached as to the probable extent of the production.

	1880.	1882.
	Pesos.	*Pesos.*
Gold bought by the mint	107,477	139,965
Gold exported	21,393	22,796
Total in gold	128,870	162,761
Silver bought by the mint	1,709,007	1,466,812
Silver exported	3,372,740	3,857,851
Total in silver	5,081,747	5,324,663

This yields a probable product by weight as follows:

	1880.	1882.
	Kilograms.	*Kilograms.*
Gold	178	223
Silver	114,300	119,800

The-export of silver from Antofagasta was as follows:

Year.	Spanish marks.	Year.	Spanish marks.
1878	357,300	1881	224,500
1879	302,500	1882	276,700
1880	239,600	1883	224,400

That is an average of 62,300 kilograms for the six years.

In the reports of the Director of the Mint at Washington, the yearly production of silver in Bolivia, Peru, and Chili, taken together, was put until 1880 at 250,000 kilograms. But this estimate was increased for 1882 to 392,783 kilograms, and for 1883 to 513,031 kilograms. Other confirmatory reports state that in 1883 there was an unusual production of silver in Bolivia (a bonanza), which, however, has not proved permanent. In individual years since 1880 a particularly large export of silver has sometimes taken place, which has been the result of the excessive issue of irredeemable paper money. This has probably driven abroad the greater part of the coins in circulation. We believe that it would be near the truth to put the silver production of Peru, Bolivia, and Chili, taken together, from 1876 to 1885 at 425,000 kilograms per year. In some years the total may have been raised by an extraordinary yield from particular mines to 500,000 kilograms; in other years may have gone down to about 350,000 kilograms. In regard to the production of gold in these countries in recent times, it seems to us an underestimate when it is put at only 300 to 350 kilograms per year.

The greater part of the Mexican and South American product of the precious metals goes first to England, and the import of gold and silver into England from these countries therefore serves to indicate approximately their production. According to the customs records there were imported into England from Mexico and South America (exclusive of Brazil) precious metals in bars and in non-British coins as follows:

Years.	Gold.	Silver.
Average of—	*Ounces.*	*Ounces.*
1876-1880	222,300	14,255,000
1881	140,000	9,016,000
1882	122,800	15,089,000
1883	150,000	17,711,000
1884	170,600	20,934,000
1885	212,000	18,067,000

Taking an average of the five years, 1881–1885, we get an annual import from Mexico, Colombia, Guiana, Peru, Bolivia, and Chili of 4,948 kilograms gold and 1,257,000 kilograms silver. These figures can be made to agree with the estimates we have given of the total product, and the general correspondence of such independent statements indicates that we can get near enough to the truth.

The gold product of Brazil, formerly so large, has been comparatively small for several decades. Only the St. John del Rey Mining Company can show considerable operations and some profit. The Morro Velho mine of this company produced, according to the published reports, the following amounts of gold:

Years.	Oitavas.	Ounces Troy.	Value in £.
1883–'84	198,716	22,909	89,202
1884–'85	226,416	26,102	101,634
1885–'86	242,035	27,903	108,647

In the last fiscal year each ton of quartz yielded 0.473 ounce of gold, and 27.9 per cent. were lost. In the Cujaba mine of the same company there were produced in 1884–'85, 3,043 ounces of gold, and in the year 1885–'86 2,809 ounces. In the latter year the gross product was less than expenses by £1,455.

The Santa Barbara Mining Company produced, in the year 1885, 42,029 oitavas of gold, having a value of £17,862. The Pitangui mine produced in the same year only 6,922 oitavas of gold, equal to £2,964. The remaining mines yielded together but a few thousand ounces of gold and produced at a loss.

The total production of gold in Brazil has amounted in recent years on the average to no more than 1,000 kilograms fine.

English experts assert that the production of gold in Brazil may be greatly developed, since hitherto only outlying veins of quartz have been worked. The gold-bearing ore of the Cujaba mine is enormous in quantity. The assay indicates 0.380 ounce of gold per ton, but no more than 0.159 ounce was secured, showing a loss of 57 per cent. An improved method of amalgamation would secure the refractory gold which now is lost in the tailings.

We get from official statistics the following statements as to the production of precious metals in Germany, inclusive of the yield from imported ores:

Years.	Gold.		Silver.	
	Kilograms.	Marks.	Kilograms.	Marks.
Average of—				
1831-1840	(*)	(*)	29, 800	5, 364, 000
1841-1850	(*)	(*)	36, 000	6, 480, 000
1851-1860	17. 3	48, 000	55, 235	9, 943, 000
1861-1870	61. 4	171, 000	78, 722	14, 170, 000
1871-1875	284. 4	793, 000	143, 080	25, 754, 000
1876	281. 3	784, 658	139, 779	21, 969, 415
1877	307. 9	857, 845	147, 612	23, 812, 056
1878	378. 5	1. 056, 338	167, 660	25, 890, 332
1879	466. 7	1, 302, 398	177, 507	26, 518, 123
1880	463	1, 291, 752	186, 011	28, 607, 561
1881	880. 6	1, 062, 565	186, 990	28, 514, 081
1882	376. 1	1, 051, 155	214, 982	32, 763, 057
1883	457. 8	1, 278, 312	235, 063	35, 087, 897
1884	555	1, 550, 858	248, 116	37, 055, 861
1885	610. 6	1, 705, 608	(277, 900)	(39, 750, 000)

* Inconsiderable.

Of the total silver product of the year 1885, 79,952 kilograms came from the Kingdom of Saxony (Freiberg), 75,075 from the Mansfield mines, 49,321 kilograms from the Clausthal mines, 33,127 kilograms from the Stollberg Company, 50,425 kilograms from other sources.

At present Germany produces about 9 per cent. of the total product of silver. Such gold as is produced in Germany is obtained, with insignificant exceptions, by separation from silver and silver ores, or from copper and copper ores. The German refining works have attained extraordinary skill in such work, and of the silver produced in German works a considerable part comes from the imported ores. Exact statements as to the extent of this importation are lacking since 1876. For that year (1876) the official statistics stated the production of silver from foreign ores to be 16,633 kilograms. Trustworthy estimates indicate that in 1878 this product had risen to about 43,500 kilograms. For the year 1884 it is estimated that silver production in Germany was about 160,000 kilograms from domestic ores and 88,000 kilograms from imported ores. The increase of our production of silver is therefore to be ascribed mainly to the increasing use of foreign raw material. In the year 1884 there were produced on account of the fiscal works in Harz and at Freiberg about 85,000 metric cwt. of silver ore, which yielded about 235 kilograms gold and about 50,000 kilograms silver, having, all told, a value of about 8,000,000 marks. It is a curious distortion of the facts to assert, as has sometimes been done, that the importation of foreign silver ores from the west coast of America, from Spain, and latterly even from Australia, for smelting in Germany, is to be regretted because it serves to drive gold out of Germany in exchange for silver, of which there is already more than enough. It should be remembered that the silver ores are paid for by the export of German commodities; that the mixture of foreign with domestic ores is necessary for the more perfect working of the latter; that Germany exports far more in refined silver and in manufactures of silver than the imported ores cost; and, lastly, that no inconsiderable decline in the demand for German labor would result if foreign silver ores were excluded.

In Austro-Hungary the production of the precious metals, according to official statements, was:

Years.	Gold.	Silver.
Average of—	*Kilbgrams.*	*Kilograms.*
1851-1855	1,775	35,000
1856-1860	1,560	31,700
1861-1865	1,690	36,500
1866-1870	1,650	39,970
1871-1875	1,395	38,550
Year—		
1876	1,903.6	47,947
1877	1,713.4	47,675
1878	1,824.1	48,662
1879	1,610.6	48,195
1880	1,645.4	47,701
1881	1,597.3	48,942
1882	1,740.8	47,663
1883	1,647	49,335
1884	1,703.3	49,907

We may now mention recent reports from other countries producing the precious metals, in order that they may not be entirely neglected.

The mines of Norway produced in the fiscal year 1883–'84 6,387 kilograms of fine silver, and the Swedish mines produced in 1883 1,583 kilograms and in 1884 1,816 kilograms.

In Great Britain silver was produced as follows from domestic lead ores:

Years.	Amount.	Value.
	Ounces.	
1878	397,471	£88,297
1879	333,674	70,906
1880	295,518	63,015
1881	308,398	67,140
1882	372,544	80,426
1883	344,053	72,484
1884	325,718	68,791
1885	320,520	64,938

The production of silver in British smelting works from imported ores is much larger. In the year 1885 silver ores were imported into the United Kingdom of the declared value of £1,085,227, of which £288,992 came from Spain, £514,844 from America, £117,841 from Australia. It should be stated that the value of these ores consisted mainly in the silver contained in them.

It is probably not too high an estimate if the yearly production of silver in Great Britain in recent years is put at about 120,000 kilograms fine.

For France, the official Statistics of Mineral Industry in France for 1881 state the production of silver to be 54,718 kilograms, of the value of 10,279,145 francs.

The silver production of Spain is estimated for the year 1880 at 65,871 kilograms, and for 1883 at 54,335 kilograms. The declared export of silver in bars amounted in 1883 to 209,721 kilograms. The export of silver ores and of silver-bearing lead is much larger.

In regard to the production of the precious metals in Italy the Annuario Statistico Italiano for 1884 contains the following statement for the year 1881: Silver ores were produced in four mines to the amount of 1,444 tons, having an average value of 1,550 lire, making a total of 2,238,951 lire. Gold ores were produced by twenty-four concerns to the amount of 12,190 tons, having an average value of 38.98 lire and a total value of 475,170 lire. Amalgamating establishments produced 214 kilograms of gold, having a value of 590,000 lire.

In the Dominion of Canada not inconsiderable quantities of gold have been produced, especially in British Columbia and Nova Scotia. The quantity of gold there produced is estimated for 1881 at 1,648 kilograms, and for 1883 at 1,435 kilograms. For Nova Scotia alone the production of gold is stated for 1882 to be £14,107, and for 1883 £15,446.

From Nicaragua there was in 1884 a declared export of 16,472 Spanish ounces of gold. The actual export is said to have been considerably larger. Opinions differ as to the future production of gold in that region.

A number of stock companies have been formed in recent years for the purpose of carrying on the production of gold on the west coast of Africa, in the Transvaal, and in British India. With few exceptions they have been unsuccessful, and much capital has been entirely lost. Occasional instances of success may be mentioned, as follows: The Wassaw (Gold Coast) Mining Company, which in 1885 produced gold to the value of £5,497; the Moodie G. M. Company (in the Transvaal), whose monthly product in 1885 is stated to average 2,500 ounces (about £8,500). The Mysore G. M. Company (in India) divided 10 per cent. dividends in 1885. Its monthly product rose from 300 ounces to 1,000 ounces, and amounted in January of the present year (1886) to 1,135 ounces.

The export of gold from Port Natal is given for 1882 as £6,865, for 1883 as £20,293, for 1884 as £16,708.

It is worth noting in regard to the production of gold that, although by far the larger part of the new undertakings which begin actual work, not to mention the mass of swindling concerns which never get so far, lose money and are soon given up, yet not inconsiderable quantities are produced by such undertakings and make their way into trade. Whether the sum invested in producing this gold is replaced by the product is immaterial, since the new gold is there, and the sovereigns which the stockholders may have put out in expenses are not lost.

The share which the chief producing countries had in the total production of the precious metals between 1851 and 1885 may be estimated as follows (the value of silver being reckoned according to the actual ratio):

Countries.	Gold.	
	Marks.	*Per cent.*
United States	6,697,500,000	37.6
Australia	6,341,600,000	35.6
Russia	2,977,800,000	16.7
Mexico, Colombia, Brazil	707,700,000	4.0
Other countries	1,085,500,000	6.1
Total	17,810,100,000	100.0

Countries.	Silver.	
	Marks.	*Per cent.*
United States	2, 551, 100, 000	26. 6
Mexico	3, 326. 100, 000	34. 4
Peru, Bolivia, Chili	1, 672, 600, 000	17. 6
Germany	668, 600, 000	7. 0
Other countries	1, 379, 500, 000	14. 4
Total	9, 597, 900, 000	100. 0

Finally, for the sake of comparison and completeness, we insert the estimates of the world's production of the precious metals, which appear in the annual reports of the Director of the Mint of the United States:

Total production of the precious metals in 1883 *and* 1884.

Countries.	1883.				1884.			
	Gold.		Silver.		Gold.		Silver.	
	Kilos.		*Kilos.*		*Kilos.*		*Kilos.*	
United States	45, 140	$30, 000, 000	1, 111, 457	$46, 200, 000	46, 343	$30, 800, 000	1, 174, 205	$48, 800, 000
Russia	39, 913	23, 868, 000	7, 781	323, 000	32, 829	21, 818, 000	9, 336	388, 000
Australia	39, 873	26, 500, 000	2, 151	89, 000	42, 960	28, 551, 000	2, 788	116, 000
Mexico	1, 438	956, 000	711, 347	29, 566, 000	1, 780	1, 183, 000	655, 868	27, 258, 000
German Empire	457	304, 000	230, 694	9, 589, 000	555	369, 000	248, 115	10, 313, 000
Austro-Hungary	1, 038	1, 089, 000	48, 708	2, 025, 000	1, 658	1, 102, 000	49, 424	2, 054, 000
Sweden	37	25, 000	1, 583	66, 000	19	13, 000	1, 816	75, 000
Norway	......	....	5, 645	235, 000	......	....	6, 387	266, 000
Italy	109	72, 000	432	18, 000	109	72, 000	432	18, 000
Spain	......	....	74, 500	3, 096, 000	......	....	3, 562	148, 000
Turkey	10	7, 000	2, 164	90, 000	10	7, 000	2, 164	90, 000
Argentine Republic	118	78, 000	10, 109	420, 000	118	79, 000	10, 109	420, 000
Colombia	5, 802	3, 856, 000	18, 283	760, 000	5, 802	3, 856, 000	18, 286	760, 000
Bolivia	109	72, 000	384, 985	16, 000, 000	109	72, 000	384, 985	16, 000, 000
Chili	245	163, 000	128, 106	5, 325, 000	245	163, 000	128, 106	5, 325, 000
Brazil	952	632, 000	....	....	952	632, 000	....	....
Japan	256	170, 000	21, 121	878, 000	256	170, 000	21, 121	878, 000
Africa	3, 000	1, 994, 000	....	....	3, 000	1, 994, 000	....	....
Venezuela	5, 022	3, 338, 000	....	....	5, 022	3, 388, 000	....	....
Canada	1, 435	954, 000	1, 641	68, 000	1, 435	954, 000	1, 641	68, 000
France	......	....	6, 356	264, 000	......	....	6, 356	264, 000
Peru	179	119, 000	45, 909	1, 908, 000	179	119, 000	45, 909	1, 908, 000
Total	141, 733	94, 197, 000	2, 812, 972	116, 923, 000	143, 381	95, 292, 000	2, 770, 610	115, 148, 000

In what has preceded we have contented ourselves with presenting such detailed statements as are either of importance for the total or else significant as illustrating the variations in different statements. These statements have been the basis of the figures summarized in the tables. We have also referred to certain noteworthy events in the production of the precious metals in recent times, although for the present they are not of any great importance. We can not enter into a detailed and critical consideration of the most recent phases of the production of the precious metals. Such an investigation should be separately undertaken. What has here been presented is meant to give information only on the salient points. Above all, we wish to present material by which the practical importance of certain essential changes in the conditions affecting the production of gold and silver may be more easily understood. For such a purpose detailed figures seem less useful than the concisest possible presentation, even though this latter may be open to the charge of being incomplete and based on scant authority.

PART II.

RATIO OF SILVER TO GOLD.

PRICE OF SILVER IN LONDON

[From the reports of Pixley & Abell, bullion brokers, in

Years.	January.	February.	March.	April.	May.	June.
1851	61⅝	61½-61⅝	61½	61⅛	61⅛-61½	60⅞-61⅛
1852	60½-60¾	60½	60⅜	59⅞-60	59⅞	59⅞-60¼
1853	61⅜	61⅜	61⅜	61⅜	60⅝-61⅜	60⅝-61⅛
1854	61½-61⅝	61⅝	61⅞	61⅝-61⅞	60⅞-61¼	61¼-61½
1855	61½-61⅝	61½-61⅝	60⅞	60⅝	61¼-61⅜	61½
1856	61⅞-61¼	61⅛-61⅜	60½-61	60½-61	61 -61⅛	60¾-61¼
1857	62¼	61½-61⅞	61⅜-61¾	61⅜-61¾	61 -61½	61⅞
1858	61½	61⅜-61⅞	61⅜	61¼-61⅜	61½-61⅞	61⅜-61½
1859	61¾-62	61¾	61¾-62¼	61⅞-62⅜	62¼-62⅜	62 -62¼
1860	62 -62⅜	62 -62⅛	61¾-62⅛	61¾	61⅝	61⅝-61¾
1861	61¼-61⅜	61⅛-61¼	60⅝-61	60⅞-61¼	60¾-60⅞	60⅜-60⅝
1862	61 -61⅝	61½-61¾	61¼-61⅜	61⅛-61¼	61¼-61⅝	61 -61⅝
1863	61⅝-61¾	61½-61⅝	61⅜-61½	61 -61⅜	61¼-61⅝	61 -61⅝
1864	61⅞-62½	61¼-61⅞	61½-61¾	61¾-61⅞	60⅞-61⅛	61⅛-61⅜
1865	61½-61⅝	61⅜-61½	61 -61⅜	60⅝	60 9/16-60¾	60½-60¾
1866	61⅜-61¾	60⅞-61⅛	60⅞-61	61 -61⅛	61 -62	61⅝-62¼
1867	60⅞	60¾	60⅝-60¾	60¾-61¼	60⅜-60¾	60⅜-60½
1868	60⅜-60⅞	60⅜-60½	60½-61⅛	60½-61⅝	60⅜-60⅝	60⅜
1869	60⅝-60⅞	60¾-61	60½-60¾	60½-60⅝	60 -60⅜	60 -60¼
1870	60½-60¾	60⅜-60½	60⅜-60⅝	60⅜-60½	60⅜-60½	60⅜-60½
1871	60½-60⅝	60½-60⅝	60⅜-60½	60 3/16-60¼	60 3/16-60¼	60⅜-60 9/16
1872	60⅝-61⅛	60¾-61⅛	60¾-60⅞	60¼-60⅞	60 1/16-60½	60 -60½
1873	59¾-59 15/16	59¾-59 15/16	59¾-59⅞	59¾	59⅜-59⅞	59 5/16-59½
1874	58 -59½	58½-59	58½-59⅝	58 9/16-59¼	58½-58⅞	58½-59
1875	57½-57⅝	57⅜-57½	57 -57¼	57⅛-57⅜	56½-57	55½-55⅞
1876	54⅞-56⅛	53 -54⅞	52½-54¼	53½-54	52 -54	50 -52
1877	56⅞-58¼	56 -57¾	53¼-56⅛	53½-55	53⅝-54⅝	53½-54
1878	53½-54	53 15/16-55¼	54⅛-55	53⅞-54¼	53¼-53⅞	52½-53 7/16
1879	49⅝-51	49½-50¼	48⅞-50¼	49½-50⅛	50 -51¾	51⅛-53
1880	52¼-52¾	52 -52 9/16	51¾-52½	51¾-52¼	52 1/16-52¼	52 3/16-52⅞
1881	51 -51¾	51¼-52⅞	52 -52⅞	52 -52⅛	51½-52	51 -51 11/16
1882	51 13/16-52⅛	52 -52 1/16	51⅞-52 1/16	52 1/16-52 5/16	52⅛-52 7/16	51⅞-52⅜
1883	50 -50 9/16	50⅜-51	50¾-51 3/16	50⅜-50 13/16	50 1/16-50⅜	50 1/16-50¾
1884	50¾-51	51 -51⅛	50 11/16-51 3/16	50½-51	50¾-50 15/16	50⅝-50 15/16
1885	49⅜-50	48 13/16-49 9/16	49 -49 3/16	48⅞-49⅞	48 15/16-50	49 -49 3/16
1886	46½-46 15/16	46½-46⅞	46 11/16-46 13/16	46 1/16-46 11/16	45 -45⅞	44 11/16-45

From 1851 to 1872 the average price of silver at Hamburg was a fixed one of 27 marcs 12 schillings pound of fine silver. [The marc banco was = 1½ marks of present German money. The "mark"

IN THE YEARS 1851-1886.

pence sterling per ounce standard (37.40) of silver.]

July.	August.	September.	October.	November.	December.	Average per year.	Average price of silver in Hamburg, M per kg. f.
60¾–61	60¾–61	60⅛–60¾	60 –60⅝	60⅝	60¾	61	178.00
60⅞	60⅞	60⅞	60¾–61⅛	61⅛–61⅞	61¼–61⅝	60½	
61⅛–61½	61⅛–61⅞	61⅞–62⅜	61⅞–62⅛	61⅞–62⅜	61⅝–61⅞	61½	
61¼	61¼	61 –61⅛	61⅛–61⅜	61⅛–61⅜	61⅝	61½	
61½–61⅝	61¾	61⅜	61⅛	60 –61⅜	61⅛	61⁵⁄₁₆	
60⅞	61¼–61⅝	61⅝–62¼	62	62¼	61⅛–61¾	61⁵⁄₁₆	
61½–61⅞	61¾–62	61⅛	61⅞	61½–61⅞	61 –62⅜	61¾	
61¼–61⅝	60¾–61	60¾	61⅛–61⅜	61¼–61⅝	61¼–61¾	61⁵⁄₁₆	
62 –62¼	61¾–62	61¾–62	61⅞–62	62	62	62¹⁄₁₆	
61⅛	61⅜–61⅝	61⅝	61⅝–61¾	61¼–61⅝	61¼–61⅞	61¹¹⁄₁₆	
60⅜–60¾	60¼–60½	60¼–60⅞	60⅝–60¾	60⅞–61⅛	61 –61¼	60¹³⁄₁₆	
61 –61⅛	61¼–61⅜	61¼–61⅜	61¼–61⅞	61⅞–62⅛	61⅝–61¾	60⁷⁄₁₆	
61 –61¼	61 –61⅛	61⅛–61⅜	61½–61⅝	61⅛–61¾	61⅝–61¾	61⅜	
61⅛–61⁵⁄₁₆	61 –61⅛	61⅛–61⅝	60⅝–61¼	60⅞–61⅜	61⅝	61⅜	
60½–60¾	60¾–60⅞	60⅝–61	61⅛–61¼	61¼–61¾	61⁹⁄₁₆–61⅞	61¹⁄₁₆	
60⅝–61⅜	60⅜–60⅝	60¾–61	60⅞–61	60⅞–61	60¾–60⅞	61⅛	
60½	60⅜–60½	60⁵⁄₁₆–60⅝	60⅜–60½	60⅜–60½	60⅜–60½	60⁹⁄₁₆	
60⅜–60⁷⁄₁₆	60⅛–60⅜	60⅛–60¼	60¼–60½	60⅜–60½	60¾–60⅞	60½	
60¼–60⁵⁄₁₆	60¼–60⅜	60⅜–60½	60⅜–60½	60⅜–60½	60⅜–60⅝	60⁷⁄₁₆	
60⅛–62	60⅜–60⅝	60¼–60⅜	60⅜–60⅝	60⅛–60⅝	60⅛–60⅝	60⁹⁄₁₆	
60¼–60⅝	60⅜–60¾	60⅝–60¹³⁄₁₆	60¼–60⅝	60⅝–61	60⅛–60⅞	60½	
60¹⁄₁₆–60³⁄₁₆	60 –60¼	60⁵⁄₁₆–60⁷⁄₁₆	60 –60¼	59¼–59¾	59⅝–59¾	60⁵⁄₁₆	
59⁵⁄₁₆–59⅜	58¹³⁄₁₆–59³⁄₁₆	58¹³⁄₁₆–59⅛	58½–59	57⅞–58⅛	58 –58¹⁄₁₆	59¼	173.22
58¼–58½	57⅞–58⅛	57⅝–58	57⅝–57¹³⁄₁₆	57¾–58¼	57¼–57¾	58⁵⁄₁₆	171.94
55¹¹⁄₁₆–55⅞	56 –56⅝	56¹⁄₁₆–56¾	56¾–57⅛	56⅝–56¹⁵⁄₁₆	56⅛–56⅝	56⅞	167.78
46¾–51½	50½–53¾	51⅛–52⁹⁄₁₆	52 –53⅝	53⅛–55	55¼–58⅛	52¾	156.34
53⅞–54½	54 –54¼	54¼–55¼	54⅝–55⅝	54 –55	53¾–54¼	54¹³⁄₁₆	160.66
52¹⁄₁₆–52¹³⁄₁₆	52⅛–52¾	51½–52⅛	49½–51⁹⁄₁₆	50⅛–50¾	49½–50¹¹⁄₁₆	52⁹⁄₁₆	154.30
51 –52⅛	51⅛–51⅞	51⅜–51⅝	51⁹⁄₁₆–53¾	53 –53¾	52⅜–53	51¼	151.54
52½–52⅞	52⅛–52⅞	52⅛–52⅝	51¹³⁄₁₆–52⁵⁄₁₆	51⅝–51⅞	51⅝–52	52¼	154.11
50⅞–52⅜	51¼–51⅞	51⅝–51¹³⁄₁₆	51¹³⁄₁₆–52⅛	51⅛–52	51¾–52	51¹¹⁄₁₆	152 93
51⅝–52	51⅞–52¹⁄₁₆	51¾–52¹⁄₁₆	51⅛–51¹⁵⁄₁₆	50⅞–51¾	50 –50⅞	51⅝	152.78
50⁵⁄₁₆–50½	50⁷⁄₁₆–50⅝	50⅜–50¹⁵⁄₁₆	50⅞–51	50⅛–50¹⁵⁄₁₆	50½–51	50⁹⁄₁₆	149.11
50¹¹⁄₁₆–50⅞	50⁹⁄₁₆–50⅞	50⅝–50⅞	50⁷⁄₁₆–50⅞	49¹¹⁄₁₆–50⁷⁄₁₆	49⅜–40⅞	50⅝	149.43
49⅝–49¾	48⁷⁄₁₆–49³⁄₁₆	47¼–48⅜	47¼–47⅝	47⁵⁄₁₆–47½	46⅞–47½	48⅝	143.87
42½–44⅝	42 –42⅛	....	....	....	....	....	....

banco per mark of fine silver (1 mark = 16 loth = 233.85489 grams); equivalent to 59⅛ marcs per here referred to by Dr. Soetbeer is a measure of weight.—*Translator's note.*]

RATIO OF SILVER TO GOLD.

[Calculated from the London price of silver.*]

Years.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Average per year.	Average per year in Hamburg.
1851	15.30	15.82	15.33	15.33	15.43	15.43	15.52	15.49	15.57	15.65	15.62	15.52	15.46	15.35
1852	15.52	15.59	15.62	15.68	15.75	15.73	15.64	15.62	15.62	15.49	15.82	15.35	15.58	15.42
1853	15.36	15.88	15.36	15.36	15.41	15.46	15.35	15.30	15.21	15.40	15.14	15.27	15.33	15.[illegible]
1854	15.27	15.23	15.26	15.26	15.27	15.36	15.36	15.40	15.36	15.40	15.36	15.82	15.33	15.22
1855	15.33	15.82	15.36	15.52	15.43	15.33	15.33	15.33	15.29	15.36	15.41	15.36	15.36	15.32
1856	15.40	15.38	15.47	15.46	15.43	15.43	15.40	15.35	15.24	15.21	15.15	15.18	15.34	15.31
1857	15.19	15.24	15.27	15.27	15.33	15.26	15.29	15.24	15.82	15.26	15.29	15.26	15.27	15.24
1858	15.35	15.27	15.32	15.36	15.33	15.33	15.44	15.47	15.51	15.40	15.29	15.30	15.36	15.26
1859	15.24	15.27	15.26	15.18	15.12	15.19	15.13	15.21	15.27	15.21	15.21	15.21	15.21	15.22
1860	15.18	15.19	15.18	15.29	15.30	15.40	15.44	15.36	15.30	15.29	15.32	15.35	15.30	15.25
1861	15.38	15.41	15.24	15 44	15.43	15.57	15.67	15.64	15.57	15.52	15.47	15.43	15 48	15.38
1862	15.35	15.82	15.38	15.41	15.40	15.33	15.46	15.41	15.38	15.83	15.21	15.29	15.30	15.32
1863	15.29	15.33	15.33	15.43	15.38	15.35	15.44	15.46	15.43	15.38	15.35	15.35	15.38	15.29
1864	15.23	15.33	15.33	15.54	15.46	15.40	15.41	15.38	15.33	15.46	15.47	15.39	15.39	15.29
1865	15.33	15.35	15.41	15.54	15.54	15.57	15.55	15.54	15.51	15.44	15.10	15.32	15.43	15.32
1866	15.32	15.43	15.47	15.65	15.32	15.19	15.35	15.57	15.51	15.46	15.47	15.49	15.44	15.27
1867	15.49	15.53	15.52	15.46	15.55	15.59	15.59	15.60	15.63	15.61	15.66	15.61	15.57	15.40
1868	15.62	15.59	15.54	15.55	15.59	15.62	15.61	15.64	15.66	15.64	15.59	15.54	15.61	15.52
1869	15.53	15.49	15.57	15.57	15.65	15.68	15.64	15.64	15.60	15.61	15.50	15.59	15.60	15.53
1870	15.57	15.60	15.59	15.61	15.60	15.60	15.45	15.59	15.62	15.59	15.56	15.58	15.60	15.45
1871	15.57	15.58	15.61	15.66	15.66	15.63	15.57	15.54	15.52	15 60	15.50	15.52	15.58	15.51
1872	15.50	15.45	15.51	15.57	15.68	15.70	15.68	15.68	15.61	15.70	15.83	15.79	15.64	15.56
1873	15.75	15.75	15.75	15.78	15.82	15.88	15.90	15.96	16.00	16.05	16.26	16.25	15.93	15.95
1874	16.05	16.05	16.00	16.01	16.06	16.06	16.15	16.26	16.32	16.33	16.26	16.40	16.16	16.05
1875	16.38	16.42	16.51	16.47	16.61	16.74	16.90	16.76	16.63	16.56	16.61	17.74	16.63	16.54
1876	16.98	17.38	17.67	17.55	17.80	17.24	19.59	18.07	18.21	17.96	17.50	16.61	17.80	17.72
1877	16.35	16.54	17.16	17.40	17.42	17.59	17.44	17.42	17.32	17.13	17.30	17.20	17.19	17.24
1878	17.53	17.38	17.30	17.44	17.62	17.76	17.92	17.97	18.33	18.71	18.65	18.87	17.96	17.96
1879	18.84	18.88	19.03	18.97	18.47	18.18	18.18	18.29	18.29	18.11	17.66	17.94	18.39	18.31
1880	17.96	18.05	18.14	18.13	18.09	17.97	17.90	17.90	18.02	18.11	18.22	18.19	18.06	18.00
1881	18.36	18.12	17.99	18.11	18.22	18.37	18.27	18.29	18.23	18.15	18.16	18.18	18.24	18.15
1882	18.15	18.12	18.15	18.07	18.04	18.09	18.20	18.15	18.17	18.23	18.38	18.70	18.27	18.17
1883	18.76	18.60	18.50	18.64	18.78	18.71	18.71	18.66	18.57	18.51	18.59	18.58	18.65	18.62
1884	18.54	18.42	18.51	18.58	18.55	18.57	18.57	18.59	18.58	18.62	18 84	18.98	18.63	18.58
1885	18.98	19.17	19.21	19.10	19.05	19.22	19.17	19.82	19.72	19.88	19.88	19.98	19.39	19.42
1886	20.20	20.22	20.17	20.33	20.75	25.04	21.65	22.20	......	......	......	......	......	......

For the years 1851 to 1880 these figures are taken from Dr. O. J. Broch's Tableaux présentées a la conférence monétaire, Paris, 1881. An obvious mistake (or misprint) for July, 1874, is corrected, the figure 16.96 for that month being replaced by 16.15, which corresponds to the price of silver at that date. After 1880 the ratio is based on Pixley & Abell's prices.

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*Let *d* mean the price in pence of an ounce Troy of standard silver (0.925 fine), and let *w* mean the corresponding ratio [illegible] silver and gold; then $d \times w = 942.9956$.

21.03

REMARKS ON THE TABLES SHOWING THE RATIO OF SILVER TO GOLD.

In the second part of the essay published by us in Petermann's Mittheilungen we have considered in detail the ratio between silver and gold up to the year 1878. In the present paper we confine our attention, for the period before 1851, to certain salient points.

The earliest information which we have on this subject is furnished by the carefully-made standards which were discovered in the foundations of the palace of Khorsabad, built by the Assyrian ruler Sargina in the year 708 B. C. The gold plate weighs 167 grams, and was $\frac{20}{60}$ of the light Babylonian *mine.* The silver plate weighs 438.62 grams, and was meant beyond doubt to be the equivalent in silver to $\frac{1}{15}$ of the gold *mine.* These plates are in value to each other as 5 to 1, in weight as 3 to 8; from which we conclude that the normal ratio of gold to silver in the ancient Asiatic civilization was 3 : 40, or 1 : 13$\frac{1}{3}$. In view of the stability of industrial conditions in Oriental countries, it is likely that this ratio had already existed many centuries before the building of the palace. The same ratio held good under the Persian kings, as is proved by the fact that Herodotus calculates the tribute paid by the Indians at 360 talents of gold, or 4,680 talents of silver, which indicates a ratio of 1 to 13.

In a philosophic treatise of about the year 400 B. C., entitled *Hipparchos*, it is mentioned as a well-known fact that in Greece gold was worth twelve times as much as silver.

Many calculations found in inscriptions and other records of the period between the Peloponnesian war and the time of Alexander the Great show that in those days the ratio between gold and silver in Greece maintained itself somewhere between 1 : 13$\frac{1}{3}$ and 1 : 11$\frac{1}{2}$.

After the conquest of the Persian empire a larger quantity of gold made its way to Greece. The sack of the treasures at Delphi also served to add gold, and the value of gold as compared with silver sank to 1 : 10. This ratio was also used in the year 189 B. C., in the treaty of peace between Rome and the Ætolians.

In Rome, in the sixth and seventh centuries A. U. C., the pound of gold was reckoned at 4,000 sesterces. This indicates a ratio of 1 : 11.91, a ratio which remained unchanged till the time of Augustus.

It is mentioned that in the year 218 B. C. the scruple of gold was coined into 20 sesterces, indicating a ratio of 1 : 17.14. It is also reported that about one century B. C., after the discovery of the rich gold field of Aquileja, the value of gold sank by a third ($\frac{1}{3}$). Further; it is said that when Cæsar brought great sums of gold from Gaul, the pound of gold was sold for 3,000 sesterces, indicating a ratio of 1 : 8.93. But all these seem to have been exceptional cases of temporary duration, which are mentioned by historians only because of the surprise which they aroused at the time.

Reckoning the ratio of gold to silver according to the coinage regulations of the first centuries of the imperial era, we find that the ratio varied from 1 : 11.30 to 1 : 12.20.

In the imperial ordinances of the years 397 and 422 (Cod. Theodos., XIII, 2, 1, and VIII, 4, 27) it is provided that a pound of silver shall be accepted as equivalent, sometimes to five, sometimes to four, gold solidi, which would indicate a ratio at that time sometimes of 1 : 14.4, sometimes of 1 : 18. It is, however, our opinion, which we have not space here to support by full discussion, that these ordinances do not indicate what was the ratio in trade, but were meant simply to lighten the payment of debts, and also to encourage payments in gold. An appreciation of gold at the dates of these ordinances is, it is true, not improbable, since in those troubled times the practice of hoarding may well have been common, and gold was most likely to be used for that purpose.

For the first centuries of the Middle Ages our data in regard to the ratio of the precious metals are few and uncertain. The Edictum Pistense, in the year 864, enacted for the Frankish empire that the pound of gold (fine) should pass at no higher rate than 12 pounds of silver of new and good denarii; and that a pound of gold which, though refined, was not refined to such a degree that it could serve for gilding, should pass for 10 pounds of silver. It must be remembered that the denarii, even though not intentionally debased, contained by no means fine silver, and that on the other hand the cost of coinage has to be reckoned in comparing gold to the silver coins. Assuming these two circumstances to balance each other, we should get for the Carolingian period a normal ratio of gold to silver of 1:12. For subsequent times, up to the beginning of the sixteenth century, we have a large number of mint ordinances and mint treaties of various countries, from which the ratio in which gold and silver were coined may be calculated. But it is a great mistake to suppose that from such sources we can obtain with certainty the actual ratio between the precious metals. The sudden and great changes which are apt to occur within very short periods in the regulations of one and the same mint suffice to make us suspicious, not to mention the great discrepancies between the contemporary regulations of different countries. The task of sifting the various data for the Middle Ages and of securing statements that will indicate with some accuracy the actual ratio at different times is an exceedingly difficult one. Upon the whole it may be said that the ratio between gold and silver was, in European countries between the ninth and the sixteenth centuries, somewhere from 1:12 to 1:10. Yet there are certain striking exceptions; as when, for instance, a code of Jutland of the thirteenth century makes one mark of gold equivalent, in valuation of land and in fines, to eight marks of silver. We limit ourselves to a few trustworthy statements which refer to actual transactions or to actual coinages of both metals at the same time.*

In Lubeck the purchases of gold and silver took place according to the following ratios: In 1346, at a ratio of 1: 11.33; in 1365, at 1:11.37; in 1441, at 1: 11.12. The contemporaneous coinage took place at a ratio of from 1: 12 to 1: 12.40. Professor Rogers gives certain notices, gathered from ancient accounts. According to these, in the year 1262 and subsequent years, the mark of gold was considered equal sometimes to 9 marks and 11¾ shillings of silver, sometimes to 10 marks of silver, and sometimes to 9½ marks of silver; which gives on the average a ratio of 1: 9.74. A bill of the year 1292, on the other hand, reckons 270 gold guilders, weighing 53½ ounces, as equal to 668⅔ ounces of silver; which would give, if the gold and silver were equally fine, a ratio of 1: 12.54. It seems certain that extraordinary changes took place at that time in England; and it is practically impossible to get any average from scattered notices of this kind.

The best way to get an approximately correct statement of the ratio of gold to silver in the trade of the Middle Ages probably is to use the table which is printed in the well-known treatise, Della Decima * * della Moneta e della Mercatura de' Fiorentini (published in 1765.) Gold and silver were coined as follows:

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* The authorities for these statements may be found in our essay above cited, and in Rogers's History of Agriculture and Prices in England. Compare also W. Schalk, Münzfuss der Wiener Pfennige.

Years.	Grains of gold in gold florin.	Grains of silver in lire.	Ratio.	Years.	Grains of gold in gold florin.	Grains of silver in lire.	Ratio.
1252............	72	770	1 : 10,70	1460............	71$\frac{6}{7}$	672¾	9,36
1296............	72	783⅓	10,88	1462............	71$\frac{6}{7}$	674⅓	9,38
1324............	70½	[sic] 960	13,62	1464............	72	[sic] 822$\frac{31}{40}$	11,43
1345............	71½	[sic] 778⅒	10,88	1471............	72	760$\frac{29}{40}$	10,57
1375............	71⅗	772⅕	10,79	1480............	72	781⅝	10,86
1402............	68	717$\frac{19}{24}$	10,56	1485............	72	752⅗	10,45
1422............	71⅗	729	10,18	1495............	72	752⅗	10,45

Putting aside the years 1324, 1345, and 1464, in which it seems likely that the mint set an exceptionally high value on gold in order to attract it to the town, we find that there was in Florence, then the central point for monetary transactions, a fairly stable ratio, varying between 1:9.33 and 1:10.87.

For the period from the discovery of America to the year 1687 (when we begin to get continuous and exact figures) we have more numerous data than in the preceding centuries; yet we cannot by any means find continuous, detailed statements.

Copernicus prepared in 1526 for King Sigismund a memorial on the reform of the coinage of Prussia, in which he said it was the general practice of nations to consider 1 pound of pure gold as equal to 12 pounds of pure silver; while in former times 11 pounds of silver had been equal to 1 pound of gold. This statement, however, does not tally with the examples occurring in the common account-books (Rechenbücher) of that period. It must be supposed, upon the whole, that these account-books give the prices that obtained in actual trade, the more so, since their estimates are frequently repeated with but slight variations. Their prices are generally given for the mark fine of silver or for the carat fine of gold, so that the ratio is clearly presented. In an account-book of Widman von Eger (edition of 1527), the average price is 7½ guilders for the mark of silver and 3½ guilders for the carat of gold; in Adam Riese's account-book, as revised in 1518, the average of nine statements indicates a price of 8.13 guilders for the mark of silver and 83.82 for the mark of gold. The first statement gives a ratio of 11.2:1; the second, a ratio of 10.31:1. Copernicus, as already stated, asserts that in 1526 the usual ratio was 12:1, a ratio much more favorable to gold. This is explained, perhaps, by the fact that Copernicus understood the prices of silver, as communicated to him, to be for fine silver, whereas they may have referred to what was called fine silver in the language of the time; that is, as to silver 15-16 fine. According to a coinage edict for the Empire, approved November 10, 1524, at Esslingen, the mark of gold was to be coined into 89 gold guilders 22 carats fine, while the mark of silver, 15-16 fine, was to be coined into 8 thalers. This indicates a ratio of 11.38:1.

We have gone into this detailed discussion of a single point chiefly in order to win the reader's confidence for the following summary statements, which rest upon careful investigation of the ratio to the close of the seventeenth century. The statements, it must be remembered, are no more than estimates, since considerable divergencies in different places and rapid variations in the same place were easily possible in those times. This being borne in mind, we present a table showing the ratio of silver to gold in Germany, the Netherlands, and France for twenty-year periods between 1501 and 1700; and we have little fear that they vary greatly from the actual market ratios of those times and places.

Years.	Ratio.	Which corresponds to a price of silver in modern German (gold) marks of—
1501-1520	$10,_{75}$: 1	260
1521-1540	$11,_{25}$: 1	248
1541-1560	$11,_{30}$: 1	247
1561-1580	$11,_{50}$: 1	243
1581-1600	$11,_{80}$: 1	236
1601-1620	$12,_{25}$: 1	228
1621-1640	$14,_{00}$: 1	199
1641-1660	$14,_{50}$: 1	192
1661-1680	$15,_{00}$: 1	186
1681-1700	$15,_{00}$: 1	186

We observe here a distinct tendency toward a rise in the value of gold as compared to that of silver—or, if another phraseology be preferred, towards a depreciation of silver—in the course of the sixteenth and seventeenth centuries; needless to say, with many and considerable variations and exceptions at different times and in different places. At the beginning of this period of two hundred years, ten and one-half pounds of fine silver would buy one pound of fine gold. At its close fifteen pounds of silver were needed to buy one pound of gold, indicating a depreciation of silver of about thirty per cent.

This great change in the ratio of the precious metals attracted at the time the attention of economic writers. The Italian Montanari says, as early as 1683, in his Trattato mercantile della moneta, after mentioning Bodin's statement of a ratio of 12 : 1, that "the ratio of silver to gold of 12 : 1 has changed to a ratio of 14 ¾ : 1." This writer believed that the chief cause of the appreciation of gold was to be found in the trade with the Levant, by which great quantities of the precious metals were exported; and the silver exported remained in circulation in the East, while the gold was hoarded.

The conclusions which we presented in previous publications as to the causes of this appreciation of gold, especially in the first half of the seventeenth century, have remained unshaken. We venture again to present these conclusions, since the events of that time present a close analogy to the similar changes in the ratio of the precious metals in modern times. What caused the extraordinary rise in the value of gold between 1601 and 1650? Was it simply an increase in silver production, leading to a fall in the value of silver; or was it a decrease of gold production, and an increased demand for gold, leading to a rise in the value of gold?

Looking first at the statements of the production of the precious metals, we find that the production of silver was greatly increased after 1545 by the rich silver mines of Potosi, and we can not be surprised if, in consequence, the relative value of silver should fall between 1550 and 1600. A fall, in fact, took place, yet a gradual and moderate one. Even in the years from 1601 to 1620 we note a slow change in the ratio. In the next three or four decades a quick and sudden rise in gold took place, although no extraordinary change occurred in the production of the precious metals. It may be alleged that the effect of the former great changes in the production of the precious metals did not produce their effect before this date, and that the real cause of the fall of silver between 1621 and 1650 must still be sought in the great influx of silver that took place after 1545 from Peru, Potosi, and Mexico. We are not disposed to deny entirely that such a postponed effect may be traced. Yet the chief cause in the great and permanent rise in the value of gold after 1620 must still be sought in the increased demand for gold that then took place, an increase of demand which far exceeded the fresh supply coming from the mines of New Grenada and Chili. The cause of the increased demand is to be found primarily in the continuous wars in Europe, which, as is well known, caused gold to be in great request. Next, it is to be found in the growth of international trade in the seventeenth century, which, notwithstanding the extending use of bills of exchange, yet created the need for shipments of coin. Obviously gold, both intrinsically and because of the common prohibition of coin shipments, was a better medium than silver. Whatever may have been the decisive cause, there can be no doubt that between 1621 and 1650 a considerable and permanent change took place in the ratio of the precious metals in all civilized countries. If wars and the necessities of government treasuries were at the outset the chief causes, yet appreciations brought about by them could not have been permanent unless a further cause, the growing use of gold in international trade, had come into operation. No explanation of such an extraordinary change can be found in the conditions of the production of gold and silver. Nor can we believe, after repeated examination, that the rise in the value of gold is to be ascribed chiefly to mint regulations. On the contrary, these regulations are generally based on changes in the price of gold that had already taken place in the open market. It is difficult to see why the governments should arbitrarily give their gold coins a higher nominal value, and thereby degrade the ordinary money of the country. Where they wished to debase their coins they did it most easily by issuing cheaper and cheaper subsidiary coins, and devices of this kind were widely used in the sixteenth and the beginning of the seventeenth centuries. These events have nothing to do with the ratio of the precious metals, since the ratios based upon them compare only gold and current silver coins. An arbitrary appreciation of gold coins, as a means of bringing gold to the mint, was necessarily ineffective and led to loss, and was never used except for a very short time.

We now come to the explanation and statement of the ratio of the precious metals since the beginning of the seventeenth century. As it is not to be assumed that all those who make use of the present materials are also able to use our earlier publication of 1879, in which this subject was treated at large, and as it is our present object to provide all necessary material with completeness, we repeat our earlier statements. After the year 1687 we possess, in the regular quotations of the price of gold or silver at Hamburg or at London, trustworthy data for ascertaining the ratio between silver and gold. We present this ratio for the period between 1687 and 1832 according to the Hamburg prices; from 1833, according to the London prices. The calculation from the Hamburg prices was made as early as 1855 on the basis of the original quotations by the Hamburg Bureau of Statistics. This was done by ascertaining the highest, the lowest, and the average rates, from the 104 quotations of each year. After 1833 we gave up these Hamburg tables, and made use of the tables of the more important London brokers. We should not omit to state, for the sake of completeness and impartiality, that the late Mr. Ernst Seyd prepared, for the years from 1733 to 1819, a series of figures noted at the Bank of England, which he compared with the Hamburg figures used by us. Mr. Seyd communicated no details as to these English quotations or as to the manner in which his averages were reached. He made the mistake, moreover, of assuming that, in giving the price of silver in pence per standard ounce, we were trying to ascertain the contemporary London price of silver by means of the Hamburg price. As a matter of fact, we carefully explained that we used this method only for the sake of expressing the price of silver more clearly in the terms now commonly used. It goes without saying that in the last century the greater cost of transportation and other circumstances might have caused the price of silver in Hamburg and in London to differ by several percents. As a market for silver, Hamburg, possessing as it did a bank money based on fine silver and a large fund of silver in the vaults of the bank, probably took higher rank than London. We therefore believe that the ratio as ascertained from the Hamburg quotations for the period from 1687 to 1832 is, upon the whole, the standard ratio. Mr. Seyd's criticism rests on his belief that "the prices of silver at London from the beginning of the century to 1872 are an absolute indication of the exact ratio between silver and gold. It is mathematically certain that the variations in the price of silver at London before 1873 above or below the price of $60\frac{7}{8}$ pence per ounce result only from changes in the actual value of silver."

Arranged by periods of several years, the average ratio of silver to gold was as follows:

Years.	Kilograms silver for 1 kilogram gold.	Corresponding price of silver in pence per ounce.	Years.	Kilograms silver for 1 kilogram gold.	Corresponding price of silver in pence per ounce.
1701-1710	15,27	$61\frac{3}{4}$	1811-1820	15,51	$60\frac{13}{16}$
1711-1720	15,15	$62\frac{3}{16}$	1821-1830	15,80	$59\frac{11}{16}$
1721-1730	15,09	$62\frac{1}{2}$	1831-1840	15,75	$59\frac{7}{8}$
1731-1740	15,07	$62\frac{9}{16}$	1841-1850	15,83	$59\frac{9}{16}$
1741-1750	14,93	$63\frac{3}{16}$	1851-1855	15,41	$61\frac{3}{16}$
1751-1760	14,56	$64\frac{3}{4}$	1856-1860	15,30	$61\frac{5}{8}$
1761-1770	14,81	$63\frac{11}{16}$	1861-1865	15,40	$61\frac{1}{4}$
1771-1780	14,64	$64\frac{7}{16}$	1866-1870	15,55	$60\frac{5}{8}$
1781-1790	14,76	$63\frac{7}{8}$	1871-1875	15,97	$59\frac{1}{16}$
1791-1800	15,42	$61\frac{1}{8}$	1876-1880	17,81	$52\frac{13}{16}$
1801-1810	15,61	$60\frac{7}{16}$	1881-1885	18,63	$50\frac{5}{8}$

This table shows, for about one hundred and ten years beginning with 1681, a noteworthy stability in the ratio, especially when compared with the continuous rise in the value of gold from 1501 to 1650. The growth of international trade and the great increase in the Mexican production of silver might lead us to expect a further depreciation of that metal. If no such depreciation set in, it may be explained by the fact that the Spanish piaster became the coin in use for many international transactions. Moreover, there was a continuous and large flow of silver to the East, where, from time to time, gold was exchanged for silver at rates advantageous for Europe. In the years from 1751 to 1782 one notices even a slight fall in the value of gold. There is no doubt as to the cause of this phenomenon, since it took place at the time of the distribution over Europe of the increased gold product of Brazil.

The opinion was then commonly entertained by governments that legislation should fix the ratio of silver to gold by mint regulations. Consequently, the fluctuations in the value of gold, and especially its rise after 1782, caused a number of regulations in different countries. None of these was of greater importance or effect than that of France, issued October 30, 1785, entitled, Déclaration du roi portant fixation de la valeur de l'or relativement à l'argent, etc. After an introduction stating that the intrinsic value of French gold coins was above their nominal value, and that they were continually exported, and that it was accordingly necessary to reduce the weight of the gold coins, the first article begins with the clear and simple provision:

> Chaque marc d'or fin de 24 karats vaudra 15 marcs et demi d'argent fin de douze deniers, et sera reçu et payé dans nos Monnaies et Changes pour la somme de 828 livres, 12 sous, valeur des dits 15½ marcs d'argent au prix actuel de 53 livres, 9 sous, 2 deniers, le marc.[*]

This ordinance marks the origin of the ratio between the precious metals which for a number of decades was considered normal, and whose establishment at the mints by statutes and treaties is now desired in so many quarters. It can not be said that the ratio of 15½ : 1 was at that time (1785) the actual ratio in free markets. For here a mark of gold was worth only about 15 marks of silver. The French ordinance obviously was intended to raise the nominal value and the current value of the new gold coins, in order to further the flow of gold to the mint and to prevent the melting and exportation of the new coins. The French coinage law of 1803 took its ratio from this earlier ordinance of 1785, enacting that 200 francs silver should be coined from the kilogram of silver $\frac{9}{10}$ fine, while 3,100 francs gold should be coined from the kilogram of gold $\frac{9}{10}$ fine.

Since the beginning of the present century the ratio has become still more favorable to gold, and, as a rule, has gone higher than the point of 15½ : 1. The cause of the higher value of gold is mainly to be found in the wars that lasted until 1815 and in the increased productiveness of the Mexican silver mines up to 1810. There was at the same time a distinct decrease in the production of gold in Brazil. When peace was re-established, the resumption of specie payments in England on a gold basis caused a strong demand for gold, and the ratio rose to nearly 16 : 1. From that time until 1860 the average yearly ratio fluctuated between 15.95 : 1 and 15.62 : 1, so that, for this period also, a fair degree of stability existed. A fall in the value of gold was apt to take place in those years in which England needed unusually large imports of grain, which were paid for by remittances of gold to the continent. That the value of gold did not rise higher during this time was the result of the increased production of gold in Russia, which afforded a much needed substitute for the decrease in the production of Brazil, Chili, and New Granada.

The discovery of the Californian and Australian gold-fields completely revolutionized the conditions of the production of both metals. Thereafter two-thirds of the value of the total product came from gold, and but one-third from silver, the proportion of former times being exactly reversed. As, at the same time, the shipments of silver to East India rose considerably, there was general expectation of an inevitable depreciation of gold. Chevalier's book, which was translated into English by Cobden, maintained this opinion; and it is true that a depreciation of gold did, to a certain extent, set in. The price of silver, which had averaged 59¾ pence in the period from 1831 to 1850, rose in January, 1859, to 62¾ pence, and averaged, during the decades 1851–1870, 61¼ pence. But the most important cause of this rise in the price of silver was not the excessive supply of new gold, but the state of trade with

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[*] 12,830 : 200,160 :: 1 : 15.522.

India, which caused, especially during the American civil war, a strong demand for silver. That the price of silver did not rise considerably higher was the result, as is well known, of the double standard—or, better, the alternate standard—of the Latin Union, which caused a large part of the new gold to be brought to Paris and Brussels for coinage, replacing silver coins. In the period from 1851 to 1870 over 6,000 millions of francs in gold were coined. Between 1867 and 1872 the average ratio became a very little higher than 15½ : 1, in favor of gold. Beginning with 1873, the ratio changed still further in favor of gold. This is the event, analogous to the phenomena of the years 1620–1650, which has attracted so much attention from Governments, economists, and business men.

We have already given, in our general tables, the average price of silver for recent years. We add here certain tables of the highest, lowest, and average prices of each year since 1876, giving both Paris and London quotations:

Years.	Price of silver in Paris according to Clément Juglar.						London price of silver according to Pixley & Abell.		
	Prime resp. Perte pr. 1,000 fcs.						Pence pr. standard ounce.		
	Gold.			Silver.					
	Highest.	Lowest.	Average.	Highest.	Lowest.	Average.	Highest.	Lowest.	Average.
1876	pair	¾ perte	⅜ perte	225 perte	35 perte	130 perte	58½	46¾	52¾
1877	1 prime	1 perte	pair	110 perte	35 perte	72½ perte	58¼	53¼	$54\frac{13}{16}$
1878	2½ prime	pair	1¼ prime	170 perte	98 perte	134 perte	55¼	49½	$52\frac{9}{16}$
1879	prime	pair	3 prime	175 perte	100 perte	137½ perte	53¾	48⅞	51¼
1880	7 prime	pair	3½ prime	135 perte	117 perte	126 perte	52⅞	51⅝	52¼
1881	7 prime	2 prime	4½ prime	140 perte	115 perte	127⅛ perte	52⅞	50⅞	$51\frac{11}{16}$
1882	4 prime	pair	2 prime	160 perte	129 perte	144⅛ perte	$52\frac{7}{16}$	50	51⅝
1883	3 prime	pair	1⅛ prime	167 perte	146 perte	156⅛ perte	$51\frac{3}{16}$	50	$50\frac{9}{16}$
1884	4½ prime	1 prime	2¾ prime	162 perte	155 perte	158⅛ perte	51⅜	49½	50⅝
1885	5 prime	pair	2½ prime	220 perte	165 perte	192⅛ perte	50	46⅞	48⅝
1886 (1 Sem)	1 prime	pair	½ prime	250 perte	215 perte	232⅛ perte	$46\frac{15}{16}$	$44\frac{11}{16}$	$46\frac{1}{16}$

The price of silver in August, 1886, was $42\frac{5}{16}$ pence per ounce standard (equivalent to 125 marks per kilogram fine silver). This price, compared to the average price of the fifty years from 1821 to 1870, namely, 60⅝ pence (equivalent to 179 marks per kilogram fine), shows a fall of $18\frac{5}{16}$ pence, or 30.2 per cent. In comparison with the highest price of silver, 62¾ pence (equivalent to 186 marks per kilogram fine), reached in the year 1859, it shows a fall of 36.6 per cent. In the countries where the silver standard exists, as in British India, this change is considered, not a fall in silver, but a rise in gold. In July, 1872, one tolah of gold was sold for 17 rupees, indicating a ratio of 15.58; while in December, 1885, one tolah cost 22 rupees 2 annas, indicating a ratio of 20.22. The price of gold had risen 30.15 per cent.

It is not within the scope of the present publication to undertake a detailed consideration of the causes of the depreciation of silver since 1873, our object being to present nothing more than materials. There is a close connection between the views and proposals on the silver question, and the legislative measures of the particular countries, on the one hand, and, on the other hand, the opinions as to the cause of the depreciation of silver and the expectations as to its future price. Matters are now in a state of transition, and statistics can not be brought to a proper close.

PART III.

CONSUMPTION OF THE PRECIOUS METALS.

PRICE OF SILVER IN LONDON

[From the reports of Pixley & Abell, bullion brokers, in

Years.	January.	February.	March.	April.	May.	June.
1851	61⅝	61½-61⅝	61½	61½	61⅛-61½	60⅞-61⅛
1852	60½-60¾	60½	60⅜	59⅞-60	59⅞	59⅞-60¼
1853	61⅜	61⅜	61⅜	61⅜	60⅝-61⅜	60⅝-61⅛
1854	61½-61⅝	61⅝	61⅞	61⅝-61⅞	60⅞-61¾	61¼-61½
1855	61½-61⅝	61½-61⅝	60⅞	60⅝	61¼-61⅜	61½
1856	61⅞-61¼	61⅛-61⅜	60½-61	60½-61	61 -61⅛	60¾-61¼
1857	62¼	61½-61⅞	61⅜-61¾	61⅜-61¾	61 -61½	61⅞
1858	61½	61⅜-61⅞	61⅜	61¼-61⅜	61½-61⅞	61⅜-61½
1859	61¾-62	61¾	61¾-62¼	61⅞-62⅜	62¼-62⅜	62 -62¼
1860	62 -62⅜	62 -62⅛	61¾-62⅛	61¾	61⅝	61⅝-61¾
1861	61¼-61⅜	61⅛-61¼	60⅝-61	60⅞-61¾	60¾-60⅞	60⅜-60⅝
1862	61 -61⅝	61½-61¾	61¼-61⅜	61⅛-61¼	61¼-61⅝	61 -61⅝
1863	61⅝-61¾	61½-61⅝	61⅜-61½	61 -61⅜	61¼-61⅝	61 -61⅝
1864	61⅞-62½	61¼-61⅞	61½-61¾	61¾-61⅞	60⅞-61⅛	61⅛-61⅜
1865	61½-61⅝	61⅜-61½	61 -61⅜	60⅝	60 9/16-60¾	60½-60¾
1866	61⅜-61¾	60⅞-61⅛	60⅞-61	61 -61⅛	61 -62	61⅝-62⅛
1867	60⅞	60¾	60⅝-60¾	60¾-61¼	60⅜-60¾	60⅜-60½
1868	60⅜-60⅞	60⅜-60½	60½-61⅛	60½-61⅝	60⅜-60½	60⅜
1869	60⅝-60⅞	60¾-61	60½-60¾	60½-60⅝	60 -60⅜	60 -60¼
1870	60½-60¾	60⅜-60½	60⅜-60⅝	60⅜-60½	60⅜-60½	60⅜-60½
1871	60½-60⅝	60½-60⅝	60⅜-60½	60 3/16-60¼	60 3/16-60¼	60⅜-60 9/16
1872	60⅝-61⅛	60¾-61⅛	60¾-60⅞	60¼-60⅞	60 1/16-60⅛	60 -60⅛
1873	59¾-59 15/16	59¾-59 15/16	59¾-59⅞	59¾	59⅜-59⅞	59 5/16-59½
1874	58 -59½	58½-59	58½-59⅝	58 9/16-59¼	58½-58⅞	58½-59
1875	57½-57⅝	57⅜-57½	57 -57¼	57⅛-57⅜	56½-57	55½-55⅞
1876	54⅞-56⅛	53 -54⅞	52½-54¼	53½-54	52 -54	50 -52
1877	56⅞-58¼	56 -57¾	53¼-56⅛	53½-55	53⅝-54⅝	53½-54
1878	53½-54	53 15/16-55¼	54⅛-55	53⅞-54¼	53¼-53⅞	52½-53 7/16
1879	49⅝-51	49½-50¼	48⅞-50¼	49½-50⅛	50 -51¾	51½-53
1880	52¼-52¾	52 -52 9/16	51¾-52½	51¾-52¼	52 1/16-52¼	52 3/16-52⅞
1881	51 -51¾	51¼-52⅞	52 -52⅞	52 -52⅛	51½-52	51 -51 11/16
1882	51 13/16-52⅛	52 -52 1/16	51⅞-52 1/16	52 1/16-52 5/16	52⅛-52 7/16	51⅞-52⅛
1883	50 -50 9/16	50⅜-51	50¾-51 3/16	50⅜-50 13/16	50 1/16-50⅜	50 1/16-50¾
1884	50¾-51	51 -51⅝	50 11/16-51 3/16	50½-51	50¾-50 15/16	50⅝-50 15/16
1885	49⅜-50	48 13/16-49 9/16	49 -49 3/16	48⅞-49⅞	48 15/16-50	49 -49 3/16
1886	46½-46 15/16	46½-46⅞	46 11/16-46 13/16	46 1/16-46 11/16	45 -45⅞	44 11/16-45

From 1851 to 1872 the average price of silver at Hamburg was a fixed one of 27 marcs 12 schillings pound of fine silver. [The marc banco was = 1½ marks of present German money. The "mark"

IN THE YEARS 1851-1886.

pence sterling per ounce standard (37.40) of silver.]

July.	August.	September.	October.	November.	December.	Average per year.	Average price of silver in Hamburg, M per kg. f.
60¾-61	60¾-61	60½-60¾	60 -60⅝	60⅞	60¾	61	178.00
60⅜	60⅜	60⅞	60¾-61⅛	61⅛-61⅞	61¼-61⅝	60½	
61⅛-61½	61⅛-61⅞	61⅞-62⅛	61⅞-62⅛	61⅞-62⅜	61⅝-61⅞	61½	
61¼	61¼	61 -61⅛	61⅛-61⅜	61⅛-61⅛	61⅝	61½	
61½-61⅝	61½	61½	61⅛	60 -61⅜	61⅛	61 5/16	
60⅞	61¼-61⅝	61⅝-62¼	62	62¼	61⅛-61¾	61 5/16	
61½-61⅞	61¾-62	61⅛	61⅞	61⅛-61⅞	61 -62⅛	61¾	
61¼-61⅝	60¾-61	60¾	61⅛-61⅛	61¼-61⅜	61¼-61¾	61 5/16	
62 -62¾	61¾-62	61¾-62	61⅞-62	62	62	62 1/16	
61⅛	61⅝-61⅞	61⅝	61⅝-61¾	61¼-61⅝	61¼-61⅜	61 11/16	
60⅛-60¼	60¼-60½	60¼-60⅞	60⅝-60¾	60⅞-61⅛	61 -61¼	60 13/16	
61 -61⅛	61¼-61⅝	61¼-61⅜	61¼-61⅞	61⅞-62⅛	61⅝-61¾	60 7/16	
61 -61¼	61 -61⅛	61⅛-61⅜	61¼-61⅝	61⅜-61¾	61⅝-61¾	61⅜	
61⅛-61 5/16	61 -61¼	61⅜-61⅝	60⅝-61¼	60⅞-61⅜	61⅝	61⅜	
60½-60¾	60⅜-60⅞	60⅝-61	61⅛-61¼	61¼-61¾	61 9/16-61⅞	61 1/16	
60⅝-61⅜	60⅛-60⅝	60¾-61	60⅞-61	60⅞-61	60¾-60⅞	61⅛	
60½	60⅜-60½	60 5/16-60⅝	60⅜-60½	60⅛-60½	60⅜-60⅝	60 9/16	
60⅜-60 7/16	60⅛-60⅜	60⅛-60¼	60¼-60½	60⅜-60½	60¾-60⅞	60½	
60¼-60 5/16	60¼-60⅜	60⅜-60½	60⅜-60½	60⅜-60½	60⅜-60⅝	60 7/16	
60½-62	60⅜-60⅝	60¼-60⅜	60⅜-60⅝	60⅛-60⅝	60⅛-60⅝	60 11/16	
60⅛-60⅝	60⅝-60¾	60⅝-60 13/16	60¼-60⅝	60⅝-61	60⅛-60⅞	60½	
60 1/16-60 3/16	60 -60¼	60 5/16-60 7/16	60 -60¼	59¼-59¾	59⅝-59¾	60 5/16	
59 5/16-59⅜	58 13/16-59 3/16	58 13/16-59⅛	58⅛-59	57⅞-58⅛	58 -58 1/16	59¼	173.22
58¼-58⅛	57⅞-58⅛	57⅝-58	57⅝-57 13/16	57¾-58¼	57¼-57¾	58 5/16	171.94
55 1/16-55⅞	56 -56⅝	56 11/16-56¾	56¾-57⅛	56⅜-56 13/16	56⅛-56⅝	56⅞	167.78
46¾-51⅛	50¼-53¾	51⅛-52 7/16	52 -53⅜	53⅛-55	55¼-58⅛	52¾	156.34
53⅞-51⅛	54 -54¼	54¼-55¼	54⅝-55⅝	54 -55	53¾-54¼	51 13/16	160.66
52 1/16-52 13/16	52⅛-52¾	51½-52⅛	49½-51 9/16	50⅜-50¾	49½-50 11/16	52 9/16	154.30
51 -52⅛	51⅛-51⅞	51⅜-51⅝	51 9/16-53¾	53 -53¾	52⅜-53	51¼	151.54
52½-52⅞	52½-52⅞	52⅛-52⅝	51 13/16-52 5/16	51⅝-51⅞	51⅝-52	52½	154.11
50⅞-52⅜	51¼-51⅞	51⅝-51 13/16	51 13/16-52⅛	51⅛-52	51¾-52	51 11/16	152 93
51⅝-52	51⅞-52 1/16	51¾-52 1/16	51½-51 15/16	50⅞-51¾	50 -50⅞	51⅝	152.78
50 5/16-50½	50 7/16-50⅝	50⅝-50 15/16	50⅞-51	50½-50 15/16	50½-51	50 9/16	149.11
50 11/16-50⅞	50 9/16-50⅞	50⅝-50⅞	50 7/16-50⅞	49 11/16-50 7/16	49½-40⅞	50⅝	149.43
49⅛-49¼	48 7/16-49 3/16	47¼-48⅜	47¼-47⅝	47 5/16-47½	46⅞-47½	48⅝	143.87
42½-44⅝	42 -42⅛	....	....	....	....	....	....

banco per mark of fine silver (1 mark = 16 loth = 233.85489 grams); equivalent to 59⅓ marcs per here referred to by Dr. Soetbeer is a measure of weight.—*Translator's note.*]

1. COINAGE.

Years.	Germany.		Austro-Hungary.		Russia.		
	Gold.	Silver.	Gold.	Silver.	Gold.	Silver.	
						Legal tender.	Subsidiary coin.
	Marks.	*Marks.*	*Florins.*	*Florins.*	*Roubles.*	*Roubles.*	*Roubles.*
1857	164, 874	13, 863, 931	....	1, 149, 519	ca20, 000, 000	ca4, 000, 000	....
1858	5, 366, 735	25, 210, 576	5, 395, 635	52, 834, 972	ca20, 000, 000	ca4, 000, 000	....
1859	2, 841, 822	83, 507, 142	10, 299, 644	57, 130, 946	ca20, 000, 000	ca4, 000, 000	....
1860	1, 150, 242	88, 369, 865	8, 277, 768	35, 819, 172	18, 597, 000	650, 000	3, 850, 000
1861	574, 695	82, 726, 743	9, 360, 555	21, 467, 034	18, 354, 000	137, 000	6, 000, 000
1862	575, 190	45, 377, 638	7, 373, 133	12, 214, 191	31, 770, 000	43, 000	6, 000, 000
1863	781, 137	22, 560, 400	15, 400, 154	11, 516, 064	36, 285, 000	25, 000	5, 925, 000
1864	3, 542, 203	20, 907, 062	6, 264, 966	15, 110, 406	20, 070, 000	148, 000	6, 005, 000
1865	408, 856	21, 561, 468	4, 325, 173	9, 714, 725	20, 085, 000	135, 000	6, 013, 000
1866	9, 067, 464	89, 768, 960	4, 281, 838	7, 615, 977	20, 069, 600	130, 125	3, 226, 003
1867	2, 471, 211	113, 191, 506	5, 732, 936	7, 767, 137	20, 671, 688	450, 068	5, 032, 541
1868	2, 725, 937	26, 832, 088	5, 659, 962	9, 416, 208	17, 510, 015	800, 005	4, 000, 002
1869	....	19, 745, 025	3, 138, 917	1, 967, 724	20, 526, 895	300, 005	5, 900, 960
1870	146, 685	19, 515, 166	3, 940, 720	5, 453, 555	26, 368, 016	400, 009	5, 000, 003
1871	58, 850	31, 925, 737	5, 568, 918	8, 390, 514	4, 600, 024	900, 005	5, 220, 498
1872	425, 542, 730	6, 160, 451	6, 783, 378	8, 624, 216	12, 669, 025	1, 000, 005	3, 500, 001
1873	590, 294, 290	2, 350, 295	5, 159, 903	11, 155, 180	15, 687, 953	700, 007	4, 501, 002
1874	93, 507, 380	46, 331, 621	4, 306, 948	9, 936, 833	25, 554, 315	700, 005	4, 276, 002
1875	166, 420, 600	114, 558, 995	3, 962, 242	14, 315, 663	21, 509, 025	700, 005	4, 400, 002
1876	159, 424, 500	211, 080, 189	5, 086, 676	18, 972, 053	30, 189, 040	6, 017, 011	
1877	112, 539, 500	46, 223, 000	7, 724, 193	16, 659, 863	33, 150, 024	10, 747, 007	
1878	124, 970, 080	6, 566, 800	5, 396, 000	28, 827, 000	34, 582, 048	16, 361, 264	
1879	46, 387, 060	453, 400	5, 146, 000	66, 677, 794	36, 125, 040	8, 354, 986	
1880	27, 992, 240	4, 531, 700	5, 102, 397	17, 311, 482	31, 300, 056	7, 515, 268	
1881	15, 521, 220	15, 006, 400	5, 036, 268	22, 238, 107	27, 144, 051	3, 608, 025	
1882	13, 307, 080		5, 870, 519	7, 787, 580	22, 735, 045	435, 012	
1883	88, 287, 470	2, 497, 750	5, 423, 042	13, 864, 878	30, 407, 056	3, 377, 861	
1884	57, 661, 740	480, 300	5, 101, 644	10, 348, 094	23, 126, 038	1, 645, 012	
1885	8, 148, 920	2, 428, 879	5, 792, 445	8, 605, 102	26, 802, 088	1, 250, 022	

Up to the close of 1885 the German Empire coined and withdrew from circulation coins as follows:

	Coined.	Withdrawn.	Remain.
Gold coins.	*Marks.*	*Marks.*	*Marks.*
Double crowns	1, 446, 450, 300. 00	717, 120. 00	1, 445, 733, 180. 00
Crowns	455, 745, 300. 00	549, 580. 00	455, 195, 720. 00
Half crowns	27, 969, 925. 00	7, 995. 00	27, 961, 930. 00
Total gold coins	1, 930, 165, 525. 00	1, 274, 695. 00	1, 928, 890, 830. 00
Silver coins.			
Five-mark pieces	71, 653, 095. 00	4, 845. 00	71, 648, 250. 00
Two-mark pieces	102, 515, 678. 00	5, 558. 00	102, 510, 120. 00
One-mark pieces	171, 136, 108. 00	4, 439. 00	171, 131, 669. 00
50 pfennig pieces	71, 486, 552. 00	2, 098. 00	71, 484, 454. 00
20 pfennig pieces	35, 717, 922. 80	8, 000, 932. 00	27, 716, 990. 80
Total silver coins	452, 509, 355. 80	8, 017, 872. 00	444, 491, 483. 80

Of nickel coins (pieces of 10 and 5 pfennigs) there were coined 35,160,344.45 marks; withdrawn, 521.50 marks, leaving 35,159,822.95 marks in circulation. Of copper coins (pieces of 2 and 1 pfennigs) there were coined 9,682,671.58 marks; withdrawn, 32.99 marks, leaving 9,682,638.59 marks in circulation.

COINAGE—Continued.

Years.	France.		Belgium.		Italy.	
	Gold.	Legal-tender silver.	Gold.	Legal-tender silver.	Gold.	Silver, 5-lire pieces.
	Francs.	*Francs.*	*Francs.*	*Francs.*	*Lire.*	*Lire.*
1851	269, 700, 570	59, 327, 309	....	18, 539, 610	9, 175, 600	1, 828, 460
1852	27, 028, 270	71, 918, 446	....	23, 023, 380	2, 997, 500	2, 438, 410
1853	312, 964, 020	20, 099, 488	....	12, 132, 990	3, 593, 250	977, 270
1854	526, 528, 200	2, 123, 887	....	....	3, 777, 130	1, 790, 675
1855	447, 427, 820	25, 500, 306	....	....	3, 820, 600	680, 850
1856	508, 281, 995	54, 422, 214	....	....	3, 516, 920	470, 835
1857	572, 561, 225	3, 809, 611	....	....	2, 591, 290	270, 700
1858	488, 689, 635	8, 663, 569	....	90, 510	5, 604, 470	203, 005
1859	702, 697, 790	8, 401, 814	....	....	12, 811, 500	312, 000
1860	428, 452, 425	8, 084, 109	....	....	5, 553, 910	295, 270
1861	98, 216, 400	2, 518, 050	....	....	3, 648, 040	863, 235
1862	214, 241, 990	2, 519, 398	....	....	39, 097, 560	964, 435
1863	210, 230, 640	329, 610	....	....	66, 025, 300	....
1864	273, 843, 705	7, 296, 610	....	....	12, 172, 600	601, 935
1865	161, 886, 835	485, 670	20, 522, 060	4, 536, 800	68, 705, 190	4, 010, 835
1866	365, 082, 925	189, 465	10, 639, 260	....	3, 926, 020	2, 351, 760
1867	198, 579, 510	54, 051, 560	26, 826, 140	18, 465, 720	5, 525, 830	....
1868	340, 076, 685	93, 620, 550	27, 634, 980	32, 852, 820	6, 807, 940	....
1869	234, 186, 190	58, 264, 285	24, 689, 480	63, 287, 710	3, 707, 100	19, 976, 230
1870	55, 394, 800	53, 648, 350	63, 824, 060	52, 340, 375	1, 095, 400	29, 845, 780
1871	50, 169, 880	4, 710, 905	45, 179, 440	23, 917, 170	470, 100	36, 000, 195
1872	....	389, 190	....	10, 225, 000	66, 100	35, 611, 920
1873	....	154, 649, 045	....	111, 704, 795	20, 404, 140	42, 273, 935
1874	24, 319, 700	59, 996, 010	60, 927, 000	12, 000, 000	5, 919, 420	60, 000, 000
1875	234, 912, 000	75, 000, 000	82, 685, 060	14, 904, 705	2, 244, 440	50, 000, 000
1876	176, 493, 160	52, 661, 315	41, 393, 640	10, 799, 425	2, 154, 560	31, 951, 715
1877	255, 181, 140	16, 464, 285	118, 121, 400	....	4, 947, 960	22, 048, 285
1878	185, 318, 100	1, 821, 420	51, 108, 000	....	6, 345, 280	9, 000, 000
1879	24, 610, 540	....	....	....	2, 929, 320	20, 000, 000
1880	....	....	....	....	2, 590, 660	....
1881	2, 167, 000	....	....	....	16, 860, 560	....
1882	3, 742, 000	....	10, 446, 200	....	139, 522, 040	....
1883	....	....	....	....	4, 067, 500	....
1884	....	....	....	....	322, 100	....
1885	289, 400	....	....	....	3, 294, 680	....

The coinage of subsidiary silver in France, Belgium, and Italy was:

Years.	France.	Year.	Belgium.	Years.	Italy.
	Francs.		*Francs.*		*Lire.*
1865	8, 736, 725	1852	60, 128	1862	1, 133, 860
1866	44, 631, 944	1853	393, 011	1863	32, 082, 874
1867	59, 706, 980	1858	173, 050	1864	30, 696, 351
1868	35, 824, 718	1866	10, 328, 000	1865	41, 937, 107
1869	9, 911, 612	1867	14, 737, 000	1866	33, 501, 071
1870	15, 402, 906	1868	5, 541, 392	1867	16, 530, 146
1871	19, 167, 595	1869	1, 393, 608	1868	1, 252, 452
1872	26, 449, 180	1880	780, 516	1881	8, 281, 588
1881	6, 733, 445	1881	219, 484	1882	5, 718, 412
1882	1, 159, 860	1882–'85	....	1883	7, 005, 420
1883–'85	....			1884	10, 994, 580
				1885	697, 546

The total coinages of the states of the Latin Union in coins of the franc system amounted, from the beginning of 1851 to the close of 1885, to:

Countries.	Years.	Gold coins.	Silver legal-tender coins.	Silver subsidiary coins.
		Francs.	*Francs.*	*Francs.*
France	1851 to 1865	5, 242, 760, 580	275, 500, 181	8, 736, 725
	1866 to 1885	2, 150, 523, 030	625, 466, 380	218, 988, 240
Italy*	1851 to 1865	243, 090, 860	15, 707, 915	105, 850, 192
	1866 to 1885	233, 202, 210	359, 059, 820	83, 981, 125
Belgium	1851 to 1865	20, 522, 060	58, 323, 290	626, 189
	1866 to 1885	563, 474, 660	350, 497, 720	33, 000, 000
Switzerland	1851 to 1865	....	2, 500, 000	....
	1866 to 1885	5, 000, 000	7, 978, 250	18, 000, 000

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* In an appendix to the proceedings of the Monetary Conference of 1885, Italy is stated to have coined, from 1866 to 1885, 238,220,245 lire gold, and 359,581,360 lire silver.

COINAGE—Continued.

Year.*	Great Britain.		Australia.	United States.		Nether-lands.†
	Gold.	Silver.	Gold.	Gold.	Silver.	Silver.
						Florins.
1851	£4, 400, 411	£87, 868	....	$62, 614, 492½	$774, 397	....
1852	8, 742, 270	189, 596	....	56, 846, 187½	999, 410	11, 366, 910
1853	11, 952, 391	701, 544	....	39, 377, 909	9, 077, 571	1, 351, 115
1854	4, 152, 183	140, 480	....	25, 915, 918½	8, 619, 270	18, 566, 549
1855	9, 008, 663	195, 510	£512, 500	28, 977, 968	3, 501, 245	12, 243, 588
1856	6, 002, 114	462, 528	1, 220, 000	36, 697, 768½	5, 135, 240	7, 628, 024
1857	4, 859, 860	373, 230	767, 500	15, 811, 563	1, 477, 000	14, 011, 102
1858	1, 231, 023	445, 896	1, 343, 000	30, 253. 725½	8, 040, 730	31, 495, 187
1859	2, 649, 509	647, 064	1, 221, 000	17, 296, 077	6, 187, 400	15, 103, 956
1860	3, 121, 709	218, 403	1, 651, 500	16, 445, 476	2, 769, 920	9, 454, 894
1861	8, 190, 170	209, 484	1, 719, 250	60, 693, 237	2, 605, 700	10, 269, 520
1862	7, 836, 413	148, 518	2, 477, 500	45, 532, 386½	2, 812, 401	10, 361, 083
1863	6, 997, 212	161, 172	1, 534, 750	20, 695, 852	1, 174, 093	10, 844, 785
1864	9, 535, 597	535, 194	2, 698, 500	21, 649, 345	548, 214	10, 684, 946
1865	2, 367, 614	501, 732	2, 271, 500	25, 107, 217½	636, 308	12, 120, 785
1866	5, 076, 676	493, 416	2, 911, 000	28, 313, 945	680, 261	10, 610, 193
1867	496, 397	193, 842	2, 401, 000	28, 217, 187½	986, 871	12, 372, 115
1868	1, 653, 384	301, 356	2, 319, 000	18, 114, 425	1, 136, 750	12, 132, 133
1869	7, 372, 204	76, 428	1, 279, 000	21, 828, 637½	840, 746	12, 740, 480
1870	2, 313, 384	336, 794	1, 220, 000	22, 257, 312½	1, 767, 254	16, 599. 618
1871	9, 919, 656	701, 514	2, 814, 000	21, 302, 475	1, 955, 905	17, 187, 587
1872	15, 261, 442	1, 243, 836	2, 741, 000	20, 376, 495	3, 029, 834	33, 540, 945
1873	3, 384, 568	1, 081, 674	2, 312, 500	35, 249, 337½	2, 945, 795	13, 787, 082
1874	1, 461, 565	890, 604	3, 398, 000	50, 442, 690	5, 983, 601	31, 989, 315
1875	243, 264	594, 000	4, 010, 000	33, 553, 965	10, 070, 368	....
1876	4, 696, 648	222, 354	3, 767, 000	38, 178, 962½	19, 126, 503	....
1877	981, 468	420, 948	3, 117, 000	44, 078, 199	28, 549, 935	....
1878	2, 265, 069	613, 998	3, 493, 000	52, 798, 980	28, 290, 825	....
1879	35, 050	549, 054	4, 153, 000	40, 986, 912	27, 227, 883	....
1880	4, 150, 052	761, 508	4, 551, 800	56, 157, 735	27, 942, 437	....
1881	....	997, 128	3, 736, 800	78, 733, 864	27, 649, 967	....
1882	....	209, 880	3, 843, 000	89, 413, 447½	27, 783, 389	....
1883	1, 403, 713	1, 274, 328	3, 268, 000	35, 936, 927½	28, 835, 470	....
1884	2, 824, 015	658, 548	4, 561, 000	27, 932, 824	28, 773, 388	....
1885	2, 973, 453	720, 918	4, 458, 000	24, 861, 123½	28, 848, 960	....

* For the United States, fiscal years ending June 30.
† In regard to the coinage of gold and of subsidiary silver in the Netherlands, see the notes *infra*.

The coinage of gold and silver in the United Kingdom was:

Years.	Gold.	Silver.
1851—'60	£56, 129, 133	£3, 462, 119
1861—'70	51, 839, 051	2, 957, 940
1871—'80	42, 398, 782	7, 079, 490
1881—'85	6, 701, 181	3, 860, 802

The Bank of England has withdrawn from circulation worn silver coins as follows:

1867-'70	£320,000
1871-'80	1,648,000
1881-'85	844,000

Worn silver has also been withdrawn in other ways during this time.

In Australia, the mint at Sydney began operations on May 15, 1855, and the mint at Melbourne on June 12, 1872. These are considered as branches of the Royal mint at London, and the Australian coins are always treated as British coins.

From the opening of the mints until the close of 1885 there was coined in Australia gold as follows: At Sydney, £52,460,000; at Melbourne, £29,311,100.

The tables given above include the total coinage of the silver in the United States, legal-tender dollars, trade-dollars, and subsidiary coins. The trade-dollars contain 378 grains of fine silver, and were originally intended only for use in the trade with the East; but they afterwards came into circulation within the country, and in recent years have been in the main withdrawn. The total coinage of silver may be divided as follows into the three classes of silver dollars, subsidiary coin, and trade-dollars:

Fiscal years.	Legal-tender silver dollars.	Subsidiary silver coins.	Trade-dollars.
1878	$8,573,500	$8,339,315	*$35,959,360
1879	27,227,500	382	....
1880	27,933,750	8,687	....
1881	27,637,955	12,012	....
1882	27,772,075	11,314	....
1883	28,111,119	724,351	....
1884	28,099,930	673,458	....
1885	28,528,552	820,408	....

*1874 to 1878 inclusive.

For the Netherlands the table (on p. 62) states, for the years 1851–1870, the total coinage of silver; for 1871–1874, only the coinage of legal-tender silver. Since 1875 there has been no legal-tender coinage of silver whatever. The subsidary coins, of the denominations of 5 and 10 cents, have been coined as follows:

Years.	Florins.	Years.	Florins.	Years.	Florins.
1871	100,000	1877	100,000	1881	200,000
1873	100,000	1878	100,000	1882	200,000
1874	100,000	1879	110,000	1884	100,000
1876	110,000	1880	100,000	1885	200,000

In addition to this there were coined for the East Indian colonies:

Years.	½-florin pieces.	¼-florin pieces.
	Florins.	*Florins.*
1882	750,000	550,000
1883	....	200,000
1884	355,000	....
1885	82,500	437,506

The gold coined in the Netherlands has been as below. Excluded from the figures are the ducats and the Wilhelmd'or, which are trade coins (ducats in 1871–1885, 387,324 pieces; Wilhelmd'or in 1851–1853: 2,676 pieces double, 10,000 pieces single, and 10,000 half pieces). The coinage of legal-tender 10-gulden pieces was:

Years.	Florins.	Years.	Florins.
1875	41,110,000	1879	5,810,360
1876	15,811,060	1880	501,000
1877	11,081,490	1885	670,950

Of legal-tender silver there were coined, according to the provisions of the coinage law of 1839, about 461,000,000 gulden, up to the close of this coinage. It turned out later that by far the largest part of these coins, more than 300,000,000, had been exported. Of gold coins the total hitherto has been 74,984,860 gulden, of which, however, but a comparatively small part remained at the close of 1880 within the country. It is worth noting that the silver for subsidiary coins issued since 1882 has been obtained by melting down the pieces of 2½ gulden, and not by the purchase of bullion. An act of March 4, 1884, authorizes the Government, in case the gold held by the bank should become considerably reduced, to melt down 25,000,000 of legal-tender silver gulden, and by their sale to secure gold.

The coinage in Denmark, Sweden, and Norway, since the adoption of the single gold standard, has been:

Countries.	Gold.			Silver.		
	Till Dec. 31, 1880.	From Jan. 1, 1881, to Dec.31,1885.	Total.	Till Dec. 31, 1880.	From Jan. 1, 1881, to Dec.31,1885.	Total.
	Crowns.	*Crowns.*	*Crowns.*	*Crowns.*	*Crowns.*	*Crowns.*
Denmark	34,754,640	....	34,754,640	18,148,230	207,557	18,355,787
Sweden	38,872,440	6,989,175	45,861,615	12,627,559	3,714,726	21,082,785
Norway	13,127,610	719,060	13,846,670	4,740,500		
Total	86,754,690	7,708,235	94,462,925	35,516,289	3,922,283	39,438,572

In Finland there were coined up to the close of 1885, 21,900,000 marks gold and 13,189,750 marks silver.

Coinage in Spain has been, from 1876 to the close of 1885:

	Pesetas.
Gold	921,654,890
Silver 5-peseta pieces	411,643,030
Silver subsidiary coins	185,555,188

In the years 1882–1885 there were coined:

Years.	Gold coins.	Silver 5-peseta pieces.	Silver subsidiary coins.
	Pesetas.	*Pesetas.*	*Pesetas.*
1882	10,343,575	8,309,680	46,984,838
1883	16,721,425	27,537,295	15,082,249
1884	25,818,700	29,239,095	5,677,864
1885	12,565,325	15,722,240	3,336,382

Portugal coined between 1854 and the close of 1882, 6,073,002 milreis of gold and 8,817,436 subsidiary coin. Since 1882 the coinage has been:

Years.	Gold.	Copper subsidiary coin.
	Milreis.	*Milreis.*
1883	201,000	516,150
1884	173,000	454,550
1885	228,000	466,850

For Greece, Roumania, and Servia, foreign mints coined, on the franc system, the following amounts:

Countries.	Gold coins.	Silver 5-franc pieces.	Subsidiary silver.
	Francs.	*Francs.*	*Francs.*
Greece	12,000,000	15,462,865	10,800,000
Roumania	3,805,000	47,700,000	30,500,000
Servia	10,000,000	1,000,000	3,500,000

No trustworthy conclusions can be reached as to the present production of the precious metals, or as to the production in the immediate past, by adding together the coinages of the different countries. Account must be taken of the coins withdrawn by various States, such coins being generally recoined. In most countries material for silver coins has been obtained in recent times mainly by melting down older coins. For instance, Germany recoined between 1872 and 1879 about 2,200,000 kilograms of silver, and Italy recoined from 1862 to 1883 about 2,500,000 kilogram of silver. The same process took place in England between 1867 and 1885, involving nearly 3,000,000 pounds of the older English silver coins.

Coinage in Mexico and the South American States is in the main simply a means for levying a tax on the domestic production of silver; and the piasters and pesos of those countries are to be treated as merchandise.

The coinage of half-imperials in Russia is quite needless, since a depreciated paper money is in circulation, and the large annual payments of gold for interest abroad could be met as easily and as cheaply by gold bars as by half-imperials. Between 1851 and 1885 there were coined in Russia 806,000,000 of rubles in half-imperials (=967,025 kilograms gold fine). A very small proportion of this amount can have escaped being melted down in foreign countries.

Large quantities of the gold coins of other States also, coined originally for domestic use, have been melted down and recoined at foreign mints, as is abundantly proved by the records of those mints. The supply of coin within the country therefore, can be ascertained from its coinage statistics only if account be taken of the proved or probable recoinage abroad and of the probable use in the arts.

The case is different with subsidiary coins, since there can be no exportation or melting down of these.

The value of the gold and silver coined in the more important civilized countries was as follows:

BY COUNTRIES.

Countries.	Periods.	Gold.	Silver, nominal value.	Gold.	Silver.
		Marks.	*Marks.*	*Per cent.*	*Per cent.*
Great Britain and Australia	1851–'85	4,879,202,000	360,883,000	93.1	6.9
United States	1851–'85	5,345,132,000	1,498,497,000	78.1	21.9
France	1851–'85	5,988,560,000	914,240,000	86.7	13.3
Belgium	1851–'85	473,037,000	358,382,000	56.9	43.1
Italy	1851–'85	385,797,000	457,325,000	45.8	54.2
Netherlands	1851–'85	131,605,000	578,608,000	18.5	81.5
Germany	1857–'85	1,959,881,000	1,163,733,000	62.7	37.3
Austro-Hungary	1857–'85	341,824,000	1,025,784,000	25.0	75.0
Russia	1851–'85	2,716,314,000	586,050,000	82.3	17.7
Scandinavian countries	1873–'85	106,158,000	42,594,000	71.4	28.6
Spain	1876–'85	746,541,000	483,731,000	60.7	39.3
Portugal	1854–'85	30,278,000	36,372,000	45.4	54.6
Total	1851–'85	23,104,429,000	7,506,199,000	75.5	24.5

BY PERIODS.

Periods.	Gold.	Silver, nominal value.	Gold.	Silver.
	Marks.	*Marks.*	*Per cent.*	*Per cent.*
1851–'55	3, 331, 106, 000	457, 580, 000	87. 9	12.1
1856–'60	3, 587, 387, 000	922, 290, 000	79. 5	20. 5
1861–'65	3, 130, 764, 000	707, 430, 000	81. 6	18. 4
1866–'70	2, 578, 198, 000	1, 172, 180, 000	68. 7	31. 3
1871–'75	3, 791, 344, 000	1, 387, 908, 000	73. 2	26. 8
1876–'80	3, 888, 634, 000	1, 738, 499, 000	69. 1	30. 9
1881–'85	2, 796, 996, 000	1, 120, 312, 000	71. 4	28. 6
Total	23, 104, 429, 000	7, 506, 199, 000	75. 5	24. 5

The preceding tables, from which the very large coinage in Mexico and British India is intentionally excluded, represent in weight of fine metal about 8,281,000 kilograms of gold and 42,000,000 kilograms of silver, whereas the total production of the precious metals in the period 1851–'85 may be estimated at 6,400,000 kilogramsof gold and 57,600,000 kilograms of silver. As already stated, a considerable part of the coinage consists in the recoinage of older coins. Yet, even when this is taken into consideration, there remains no doubt that in the last thirty-four years very large parts of the gold and silver coined in civilized countries have been melted down or exported to the East, and have thereby disappeared from the monetary supply of the civilized countries.

ABRASION OF COINS.

The loss which the monetary supply of the precious metals suffers from the abrasion of coins is constant and inevitable. Yet it is by no means so important as was assumed in former statistical compilations. W. Jacob estimated it for gold coins at ⅛ of 1 per cent. per year; for silver coins, as high as ⅔ of 1 per. cent. per year; and he believed that, starting with an assumption (quite arbitrary) as to the probable supply of the precious metals at the time of the Emperor Vespasian, he could calculate the loss from that time up to the discovery of America. Careful investigations have been repeatedly made on this point in modern times, the results of which we have collected and published, and which show that the loss from abrasion is comparatively insignificant. This is particularly true at the present time, in consequence of improvements in coinage and the development of banking, more especially for those large gold coins which form the great mass of the general monetary supply of gold. Extended investigations in France and in Switzerland have shown that the average annual loss through abrasion on 20-franc pieces is about ⅕ per thousand; and exact weighings of large sums of German double-crowns, which had been several years in circulation, showed an annual loss of only ⅐ per thousand. That is to say, on the average thirty-five years must elapse before gold pieces lose one-half of their original standard weight. After the first years of circulation, when the coinage marks are already somewhat smoothed off, the abrasion naturally becomes less. On the other hand, smaller gold coins suffer more from abrasion, since the space which they present is comparatively larger, and they pass more frequently from hand to hand.

The question of the abrasion of gold coins has latterly attracted much attention in England and has led to repeated careful investigations, which seem to indicate that the opinion just expressed of the slight importance of this consumption of gold must be modified. The Bank of

England, as is well known, weighs every gold coin presented to it, and cancels those under weight. The consequence is that gold coins which are nearly under weight are rarely presented to the bank, but remain in circulation indefinitely, and constantly lose more and more in weight. Mr. Jevons calculated, on the basis of actual weighings, that the annual average abrasion of the sovereigns in circulation amounted to one-third to one-fourth per thousand, while that of half sovereigns was more than one per thousand; and he concluded that a very considerable proportion of the gold coins circulating in the United Kingdom were under weight. Later investigations, especially those made by Mr. J. B. Martin in 1882, have confirmed this conclusion. It will be remembered that the chancellor of the exchequer last year openly admitted the need of a general recoinage of the smaller gold coins, and proposed, as a means of covering the expenses of the operation and of the future maintenance of the standard, the reduction of the half sovereigns to the status of subsidiary coins, making them legal tender only for sums up to £5. This proposal met with little favor, and is not likely to be carried out.

The investigations just referred to indicate that of a total circulation in the United Kingdom (exclusive of what is in the Bank of England) of about £80,000,000 sovereigns and £20,000,000 half sovereigns, about £44,000,000 sovereigns and £11,000,000 in half sovereigns have become under weight. Messrs. Jevons and Freemantle put the annual loss by abrasion at £22,000 for the sovereigns and £13,000 for the half sovereigns. The withdrawal and recoinage of the underweight pieces therefore would involve a considerable loss. It must be remembered, however, that the loss of actual gold would probably be diminished by the fact that some overweight coins were melted down at the outset by private individuals, and that a certain loss in weight of the coins is the result of clipping, and therefore causes no real diminution in the supply of gold. The comparison of the underweight coins, therefore, with the regular standard does not represent a complete loss.

Taking all things into consideration, we believe that we may adhere to the conclusion that the annual loss by abrasion on the total monetary supply of 13 milliards of marks gold in civilized countries is certainly not more than 700 to 800 kilograms gold. The diminution of the supply of the precious metals by accidental losses may be left out of account; for it is likely to be compensated by the discovery of sums formerly concealed, of which in many cases nothing is heard, and which at all events are not considered in the statistics of the production of the metals.

The loss which silver suffers through abrasion, especially in the case of subsidiary coins, is for obvious reasons much greater than in the case of gold coins. Yet it is by no means so large as was formerly supposed. If it were set as high as 50,000 kilograms per year in civilized countries, all accidental losses included, the estimate would probably be too high rather than too low; and this sum is not 2 per cent. of the present annual production of silver.

As a proof of the great interest which is felt in England in regard to the protection of their coins from abrasion, we mention the following careful investigations which have appeared in recent years on this subject (in the Institute of Bankers in London): Our Gold Coinage, an inquiry into its present defective condition, etc., by J. Biddulph Martin, Journal of the Institute, June 1882. The Deficiency of Weight in our Gold Coinage, by R. H. Inglis Palgrave, Journal, March, 1883. Seniorage and Mint Charges, by J. B. Martin, Journal, April, 1884. The Gold Coinage, Position of Matters at the Present Time, by R. H. Inglis Palgrave, Journal, December, 1884.

2. CONSUMPTION OF THE PRECIOUS METALS IN THE ARTS.

The use of the precious metals as money has always been by far their most important use in civilized countries, and has been the foundation of their great value. Side by side with it, however, has continued their use for plate, for ornament, and for various purposes in the arts. The transition from one use to another has been constant. Large quantities of coins and bars are continually withdrawn from use as money; and, on the other hand, gold and silver plate and ornament are frequently melted in order to be turned into money. In due course of time we shall give an approximate estimate of the present monetary supply of the civilized countries; but we shall not venture to give an estimate of the probable supply of gold and silver plate and ornament in the world at large, or in individual countries. But it is worth while to try to ascertain the annual use of gold and silver in civilized countries in the arts, including their use in the fine arts, for ornament, for plate, and in the arts at large, although it is exceedingly difficult to calculate, and ascertainable only with wide limits of error; for it is connected with points of essential importance in the question of standards. Four years ago we published a statistical investigation of this subject in an article entitled The Consumption of Gold and Silver (Jahrbücher für Nationalökonomie, new series, Vol. III). We treated the subject with all the care possible in face of the lack of materials; and the estimates then made by us have been frequently cited. We had hoped that other, more detailed, estimates would be added, but this hope remains as yet unfulfilled, except in the investigations which Mr. Burchard, of the United States Mint, made in recent years on the increasing use of the precious metals in the arts in the United States. Notwithstanding the uncertainty of these estimates, recent investigations have nevertheless made it plain that this consumption of the precious metals is considerably larger than had before been supposed.

In no country have the statistics on the use of the precious metals in the arts been so carefully handled as in the United States. In the fiscal year 1878–'79 all manufacturers who could be supposed to use gold or silver for plate, jewelry, watch-cases, plating, or in chemical processes, were asked by circular letters to give information as to the extent and character of their consumption. Answers were obtained to 1,401 out of 3,506 letters, 448 answers giving the desired information. Mr. Burchard believed that from this and other sources he could estimate the annual consumption of gold at $7,000,000 and the annual consumption of silver at $5,000,000. In his annual report for 1883–'84 he says:

"In order to obtain fuller information in regard to the use of the precious metals in the arts, circular letters were again sent to all persons and firms on whose part a consumption might be expected. The number of these letters was 7,969. Answers were received to 5,418 letters, from which it appeared that 2,734 persons or firms used gold to the value of $14,500,000 (21,800 kilograms fine) and silver to the value of $5,500,000 (132,000 kilograms fine)."

The superintendent of the assay office in New York reports that the value of the bars delivered during the fiscal year 1883 for presumable uses in the arts was, gold $4,615,118 and silver $5,205,996. The value of the precious metals used by manufacturers in the form of stamped United States or refinery bars was $7,137,711 gold and $4,551,172 silver.

This seems to indicate an increase in the consumption of gold and silver in the arts, especially in the form of United States gold coins and stamped United States or refinery bars. It seems probable that in the year 1883 $6,000,000 gold and $4,500,000 silver were taken from the domestic production for use in the arts.

We give below a more detailed statement of the industrial use of the precious metals in the United States for 1883, indicating both the form in which the metal was consumed and the purpose for which it was used. The tables are taken from Mr. Burchard's reports.

Statement showing the value and character of the gold and silver used in the arts and manufactures during the calendar year 1883.

[As reported by the persons and firms who had been addressed.]

GOLD.

Manufactures.	Number manufacturing.	United States coin.	Stamped United States or refinery bars.	Old jewelry, plate, and other old material.	Foreign coin.	Native grains, nuggets, etc.	Wire or rolled plate.	Total gold.
Watch-cases	32	$575,812	$2,976,550	$38,101	$1,508	$520	$5,817	$3,598,308
Watch-chains	14	374,997	286,884	1,907	600	135,410	27,202	827,000
Dental supplies	7	700	33,437	3,775	....	....	....	87,912
Pens	14	14,578	90,325	6,100	5,227	2,134	27,560	145,924
Instruments	45	68	....	3,568	....	621	942	5,199
Leaf	51	178,424	792,551	57,498	6,816	6,700	42,835	1,084,824
Plate	219	379,291	67,928	5,500	590	8,933	66,626	528,868
Spectacles	41	192,400	7,169	8,830	1,315	4,987	727	215,428
Chemicals	27	7,438	7,685	3,551	550	207	12,180	31,611
Jewelry and watchmakers' supplies	11	24,498	13,983	9,123	....	1,569	30,054	79,227
Jewelry and watches	2,273	3,125,738	2,861,149	738,638	177,794	541,306	458,745	7,905,163
Total	2,734	4,875,587	7,137,661	876,641	194,400	702,387	672,688	14,459,464

SILVER.

Manufactures.	United States coin.	Stamped United States or refinery bars.	Old jewelry, plate, and other old material.	Foreign coin.	Native grains, nuggets, etc.	Wire or rolled plate.	Total silver.	Total gold and silver.
Watch-cases	$35,200	$1,777,193	$31,937	$219	$1,000	$50	$1,845,599	$5,443,907
Watch-chains	524	14,768	....	....	6,790	1,462	23,544	850,544
Dental supplies	450	6,060	....	....	....	228	6,738	44,650
Pens	216	4,254	100	1,655	505	....	6,730	152,654
Instruments	931	3,752	693	755	864	6,995	13,990	19,189
Leaf	11	22,697	4,107	300	835	18,933	46,883	1,131,707
Plate	16,856	1,710,515	40,761	7,690	8,495	281,977	2,066,294	2,595,162
Spectacles	3,631	16,461	1,254	205	250	1,981	23,782	239,210
Chemicals	9	375,429	35,554	500	1,580	3,347	416,419	448,030
Jewelry and watchmakers' supplies	245	4,806	800	....	1,505	975	8,331	87,558
Jewelry and watches	158,564	616,237	106,745	142,949	49,733	23,992	1,098,220	9,003,383
Total	216,637	4,552,172	221,951	154,273	71,557	339,940	5,556,530	20,015,994

Of the persons and firms to whom circulars were addressed 2,551 sent no answer; but it does not follow from this that they made no use whatever of the precious metals. It has therefore been thought that the consumption in the arts in the United States is considerably larger than the Director of the Mint states. But, on the other hand, doubt has often been expressed whether many manufacturers might not have overstated their consumption, in which case the computed total would exceed the actual consumption. But this doubt is officially declared to be unfounded. It is to be hoped that these inquiries will be continued, and that they will yield trustworthy information in regard to the use of gold and silver in the arts in the United States.*

In regard to the consumption in other countries we state a few significant facts, referring for further information to the essays already mentioned (Jahrb. f. N. O. und Stat., N. F., Vol. III, 1881).

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*We gave above the conclusion reached by the former Director of the Mint at Washington in regard to the industrial consumption of the precious metals in the United States in 1883. Since this was printed we have received from the present Director of the Mint, Mr. Kimball, a corresponding statement for the year 1885, which is to be printed in the next annual report. Mr. Kimball writes:

"Circulars were sent to about 8,000 individuals and firms whose business led him to suppose that they were consumers of gold and silver in the industrial arts. Responses were received from 4,372 firms, of which 2,700 proved to be consumers. The value of the gold used by the 2,700 firms during the calendar year 1885 was reported as follows, namely: $10,837,944 against $14,500,000 reported by about the same number of firms to the Director of the Mint in 1884. Of this amount about $2,800,000 consisted of United States coin and about $6,000,000 of stamped United States bars. The foreign coin used amounted to $178,000 and old jewelry to $819,000, leaving only $467,000 of native grains and $559,000 of wire and rolled plate.

"The silver consumption reported by the same firms was $3,470,000, of which $124,910 consisted of United States coin, $2,773,975 of United States refinery bars, $40,000 of foreign coin, and $219,000 of old jewelry, plate, etc., leaving only $94,000 of native grains, and about $217,000 of wire and rolled plate.

"The result of this inquiry leads to the conclusion either that the consumption of gold and silver in the industrial arts has fallen off since 1883, or that there is less duplication in the returns than heretofore as between original and secondary manufacturers.

"Having the benefit of the previous lists of jewelers and others, and a recent edition of Zell's Business Directory, names were selected of persons only who had either replied heretofore or who the Director had reason to believe were engaged in the manufacture at first hand of gold and silver materials."

Statement showing the value and character of the gold and silver used in the arts and manufactures during the calendar year 1885, *as reported by the persons and firms who have been addressed.*

GOLD.

Manufactures.	United States coin.	Stamped United States or refinery bars.	Old jewelry, native grains, foreign coin, and other material.	Total.
Chemicals	$32,040	$13,903	$10,433	$56,376
Platers	251,741	210,831	215,143	677,715
Gold pen manufactures	7,433	34,886	14,136	56,455
Gold and silver leaf	58,150	527,453	91,751	677,354
Dental and surgical instruments, etc.	3,970	149,186	21,630	174,786
Spectacles and opticals	52,557	62,420	19,316	134,293
Miscellaneous	116,604	44,168	30,172	190,944
Jewelry and watches	2,266,577	4,980,458	1,622,841	8,869,876
Total	2,789,072	6,023,305	2,025,422	10,837,799

SILVER.

Manufactures.	United States coin.	Stamped United States or refinery bars.	Old jewelry, native grains, foreign coin, and other material.	Total.
Chemicals	$91	$305,165	$75,832	$381,088
Platers	27,824	1,166,403	108,345	1,392,632
Gold pen manufactures	55	3,191	812	4,058
Gold and silver leaf	....	21,881	24,240	46,121
Dental and surgical instruments, etc.	4,682	107,717	15,402	127,801
Spectacles and opticals	2,487	42,424	4,037	48,948
Miscellaneous	838	5,330	1,355	7,523
Jewelry and watches	90,933	1,121,804	254,505	1,467,242
Total	126,910	2,773,975	574,528	3,475,413

In Great Britain the tax returns indicate in recent years a use of no more than 24,000 ounces of gold and 800,000 ounces of silver for manufacturing purposes. But this is no indication of the total consumption in the arts, since the most important uses are not subject to taxation; for instance, for watch cases, chains, rings, buttons, clasps, gold leaf, gilding, gold wire. The same holds good of the use of silver. In the report of the parliamentary commission of 1876 it is estimated that £600,000 of silver and from £250,000 to £500,000 of gold are consumed annually, which is certainly too low an estimate. Inquiries at Birmingham, in 1881, among men of business whose judgment might be trusted, led to the conclusion that the annual consumption of gold in that place was about 300,000 ounces. An estimate putting the consumption in the arts in all forms at 20,000 kilograms gold and 90,000 kilograms silver, of which 15 and 20 per cent., respectively, come from old material melted down, will certainly not be too high. Higher estimates have been made. It is to be hoped that English statisticians may not be deterred by the impossibility of getting more than approximate statements, from inquiries as to the present use in the arts in the United Kingdom.

In regard to France the following estimates were laid before the International Monetary Conference of 1881:

The annual consumption of gold by goldsmiths and jewelers was put at 14,000 kilograms (average .740 fine), or 35,600,000 francs. A considerable part escapes taxation ($\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$?, say $\frac{1}{5}$), 2,800 kilograms, or 7,100,000 francs. Manufacture of medals (.916 fine) consumes 100 kilograms, or or 314,000 francs. Total, 16,900 kilograms, or 43,014,000 francs.

The gold used at Paris by refineries for certain kinds of gilding amounted, on the average, for the years from 1872 to 1880, to 684 kilograms fine.

If we add to these sums the quantities of gold which are used in other forms, for instance, for gold leaf, gold wire, and smaller articles not subject to taxation, in regard to which we have no data, we shall find that our earlier estimate of an annual use in the arts in France of 21,000 kilograms gold and 100,000 kilograms silver (of which 20 and 25 per cent., respectively, came from old materials) was not too high.

The gold and silver articles declared for taxation by the Bureaux de Garantie were as follows:

Periods and years.	Gold articles.	Silver articles.	Periods and years.	Gold articles.	Silver articles.
	Kilograms.	*Kilograms.*		*Kilograms.*	*Kilograms.*
1861-'70	11,099	66,225	1880	12,843	75,508
1871-'75	10,706	64,478	1881	14,534	82,091
1876	11,635	72,054	1882	14,264	82,201
1877	11,191	76,398	1883	12,771	82,235
1878	12,722	76,385	1884	10,750	75,282
1879	12,407	73,795	1885	9,390	74,466

Probably an addition of 20 per cent. at least must be made for articles exported or not declared.

A statement kindly furnished by the Department of Coins and Medals in March, 1886, says that the gold and silver annually used in France in the arts amounts to 15,500 kilograms gold and 145,500 kilograms silver.

For medals there were used, in the five years 1880 to 1884, on the average, 106 kilograms gold and 2,520 kilograms silver annually, For Switzerland we refer to the following statements made by the Swiss delegates to the International Monetary Conference of 1881. In Geneva the largest refining establishment of the place had delivered 7,573 kilograms of gold of various degrees of fineness in 1880, 7,000 kilograms being for Swiss use. But it had used about 3,000 kilograms of old gold derived from Switzerland. The remaining refining establishments of Geneva had delivered about 3,000 kilograms gold. On the whole, it was supposed that between 7,000 and 8,000 kilograms gold (over and above remelted material) were annually used in Geneva, having a value of 21,000,000 francs. Add about 6,000,000 francs for gold melted by the manufacturers themselves, and we have a consumption of 27,000,000 francs in Geneva alone. The consumption at Neufchâtel might be put at 15,000,000 or 16,000,000 francs, of which, however, about 2,000,000 francs came from Geneva and should be deducted. For the whole of Switzerland the annual use in the arts might be put at about 40,000,000 francs, or 11,600 kilograms fine gold. This estimate agrees, on the whole, with our own estimate, made five years ago, which put the annual consumption of gold in the industries of Switzerland at 15,000 kilograms gross, or, after deduction made for remelting, at 11,250 kilograms net.

An independent estimate has been sent us which arrives at the use of gold in Switzerland for the year 1884 as follows:

	Kilograms fine.
Net deliveries by the refineries of Geneva	6,000
Gold pieces melted in factories at Geneva	600
Consumption at Neuenburg	3,400
Estimate for the Jura district, the canton of Berne, and the rest of Switzerland	1,200
Total	11,200

This estimate agrees upon the whole with the preceding. It should be mentioned, however, that more recent estimates received by us indicate that the industrial consumption of gold in Switzerland has become considerably smaller in the last three years.

The use of the precious metals in the arts in Germany is considerable. A large part of it appears in an export of articles of gold and silver, and especially of manufactures of various kinds containing gold.

We were informed that no exact statement could be given of the consumption of the precious metals by the jewelers and goldsmiths in the district of Pforzheim. In former times the number of workmen employed was a good indication of the quantity of metal consumed, but the extension of the industry of the district to finer articles and to plated ware has caused the number of workmen to be no longer a safe indication. Estimates from persons who are in a position to judge put the average annual consumption at Pforzheim during the years 1876–'80 at about 3,500 kilograms fine gold, and at the same quantity of silver. An estimate for subsequent years has been sent us, and is as follows:

Years.	Fine gold.			Fine silver.		
	Kilograms.	Per kilogram.	Total.	Kilograms.	Per kilogram.	Total.
		Marks.	*Marks.*		*Marks.*	*Marks.*
1881	4,000	2,820	11,280,000	5,000	155	775,000
1882	4,000	2,820	11,280,000	6,000	155	930,000
1883	4,000	2,820	11,280,000	7,000	155	1,085,000
1884	3,000	2,810	8,430,000	7,000	150	1,050,000

This material was obtained partly from refineries of Pforzheim and other places, and partly by melting all sorts of coins, among them many 20-mark pieces.

The increase in the use of silver in recent years is to be explained by the larger production of silver and of plated articles, while the decrease in the use of gold results from the fact that 13½-karat articles are used less than formerly, and 8 and 18 karat articles are used more.

A statement received from the Board of Trade of Pforzheim for the year 1885, says:

> The export of manufactures of the precious metals decreased in 1885. The export of ornamental silver articles has shown a noticeable decline, which may be explained partly by a change in fashion, partly also by the overproduction in England, which floods foreign markets and causes English articles to be sold almost at cost. The estimate of 7,000 kilograms silver for 1884 can, therefore, no longer be retained; the quantity for 1885 does not exceed 5,000 kilograms. On the other hand, the estimate as to gold may stand. Although the year 1885 was less active than the preceding year in the production of gold articles, yet the estimate of 3,000 kilograms was a very conservative one; and moreover, the recent demand for handsome solid articles with genuine stones and 18-carat setting has been large.

The annual consumption at Hanau and neighborhood was estimated four years ago at about 3,200 kilograms gold (9,000,000 marks) and 1,400 kilograms silver (224,000 marks.) For the years 1881-'84 the consumption of gold fell to 2,900 kilograms, while that of silver rose. The gold consisted almost exclusively of German and foreign gold coins, only 10 per cent. coming from gold bars; while silver is used exclusively in the form of pure metal. A recent communication says:

> Since gold jewelry is made almost exclusively from gold coins, there are no means of calculating with exactness the consumption of gold from year to year. We believe that in 1885 this consumption has again decreased about 10 per cent. as compared with preceding years. The export of gold articles to the United States ceased entirely after the increase in the import duty in that country.

For the gold and silver factories of Gmünd and Schorndorf, and in the district of Stuttgart, the annual consumption was estimated a few years ago at about 1,100 kilograms gold and 6,500 kilograms silver. No essential change seems to have taken place since then. The old gold remelted in this district is inconsiderable.

The gold and silver factories of Berlin seem to have consumed annually about 500 kilograms gold and 12,500 kilograms silver in recent years. In 1885 the consumption diminished somewhat. A considerable change has taken place during the last six years in the production of gold ornaments in the large European cities. Large massive jewels are no longer in demand, but diamonds, pearls, and especially rubies and sapphires, in light gold settings, are sought for. This change in fashion must have led to a decrease in the consumption of gold. Diamonds are set in silver more than in gold. The sale of jewelry has increased largely, but that of more expensive articles of silver has diminished. The latter circumstance is the result of the fashion of decorating tables with artistic articles in bronze. Moreover, the improvements in the production of plated ware and the greater attention paid to modeling and chiseling, which causes plated ware to be not unfrequently of higher artistic merit than solid ware, has led to a decrease in the use of silver.

The gold factories of Bremen and Hamburg inform us that their annual consumption of gold is about 64 kilograms. Over and above this we are informed that the present consumption of gold and silver in Hamburg is about 40 kilograms gold and 3,000 kilograms silver. Of the gold, about 10 kilograms come from the refinery, 15 kilograms from coins melted down, and 15 kilograms from the remelting of gold articles. Of the silver, about 2,000 kilograms comes from the refinery and 1,000 kilograms from remelting old silver.

The silver factories at Heilbronn used annually, from 1881 to 1883, 9,030 kilograms silver, and in the year 1884 alone 12,300 kilograms silver. Only 400 kilograms came from old silver remelted. The consumption of gold is no more than 15 kilograms per year. In 1885 one large factory in this place consumed 10,700 kilograms silver, in value 1,675,000 marks, and shipped abroad 700,000 marks' worth. Two silver factories at Bremen consumed:

	Kilograms fine silver.
1881	10,320
1882	10,380
1883	11,294
1884	11,900
1885	12,077

The use of silver in the arts is here increasing gradually. The old silver remelted amounted to no more than 300 to 430 kilograms annually. The production of silver forks and spoons has been increasing from year to year.

The production of gold leaf and gold wire forms an important part of the use of the precious metals in the arts. The chief seat of this manufacture is Nürnberg and the neighboring country. The annual consumption of the establishments in that region for the years from 1881 to 1884 may be set between 1,100 and 1,250 kilograms fine gold and 10,500 to 12,000 kilograms fine silver. Fine gold is used almost exclusively, and is obtained from the refineries of Frankfurt and Hamburg. About 80 per cent. of the gold is used for gold leaf and 20 per cent. for wire and for colors on china. In 1885 an approximate estimate puts the gold for gold beating at about 1,000 kilograms and that for wire and gold lace at 100 kilograms, while the consumption of silver was 7,000 kilograms. In this estimate, however, the metal bought from outside concerns is not included. Next to Nürnberg, Dresden produces gold leaf in greatest quantity. In each of the two years 1882 and 1883, seven establishments at Dresden used about 1,600 ducats per week, which would make 280 kilograms of fine gold per year.

The production of gold leaf has not increased in recent times—a circumstance attributable to the increase in the production of imitation gold leaf.

The statistics of occupations in the German Empire, according to the enumeration of June 5, 1882, have a class entitled "Manufacturers of the precious metals (goldsmiths, jewelers, gold and silver beaters, gold lace makers, mints)." In these occupations there were employed in the German Empire:

	Total.	In the principal seats of the industry.
Employers and superintendents	5,821	2,078
Working at their houses on account of others	730	581
Administrative officers, clerks, etc	588	429
Other workmen and employés	22,960	17,005
Total	30,079	20,093

The estimates presented above indicated that, in the principal seats of the industry, where the consumption takes place chiefly in factories and in large quantities, the consumption in recent times amounted to 11,000 kilograms, fine gold per year. This does not include the consumption for other industrial purposes in these same districts, for instance, at Nürnberg. We may assume that, for those whom the census states to be employed elsewhere, about 5,500 kilograms gold should be added. This would bring the probable total use of gold in the arts in Germany to about 16,500 kilograms. But this estimate seems too high. It is true that the factories of gold and silver articles at Munich, Hamburg, Breslau, Liegnitz, Idar, and elsewhere, use appreciable quantities of gold and silver, and every establishment must consume something, be it ever so little; yet, taking one thing and another into account, this accessory consumption of gold, as it may be called, can be set at 2,000 to 2,500 kilograms gold. This estimate we made in earlier publications. On the other hand, a consumption of more than 1,000 kilograms must be added for various preparations used in gilding (for porcelain, picture frames, wall paper, etc.); this being over and above the pure gold leaf already taken into account. Comparatively little silverware has been used in the last twenty-five years in the retail shops. The articles sold in them, such as spoons, forks, chains, thimbles, boxes, are generally obtained from the large factories at Heilbronn, Dresden, and elsewhere.

All told, we may estimate the consumption of gold and silver in the arts in Germany at about 15,000 kilograms gold fine, and 110,000 kilograms silver fine. Of the silver about 12,000 kilograms is consumed in making oxide of silver, used mainly by photographers.

To separate out of this total quantity the proportion which comes, not from coins melted down or from fresh bars, but from the remelting of old metal, is a task to be solved with great difficulty and caution. We must consider not only the gold and silver articles melted down by the manufacturers, but also those used in the refineries from which they buy their fine gold and fine silver; although, as detailed reports from these establishments show, this latter quantity is not considerable.

The consumption of gold and silver in the arts in Germany exceeds considerably the domestic sale of manufactures of these metals; for there is a large and regular export. For our present purposes this export need not be considered, except in so far that we must not count it as part of the consumption of the precious metals in the countries to which it goes.

We have paid no attention so far to that important branch of industry which consists in refining gold and silver, since the product of the refining goes to establishments, either domestic or foreign, which have already been considered. Nevertheless it may be of interest to present some facts as to the refineries of Germany. These may serve, moreover, to show that our estimates of the consumption in the arts are not too high.

The larger refining establishments are the Gold and Silver Refinery at Frankfurt a. M.; The North German Refining Company, of Hamburg; and the firm of Sachs and Edinger at Berlin. In addition there are refining works at the mints at Munich and Stuttgart, while several smelting works produce refined gold and silver.

The Frankfurt concern produced in the last four years—

Years.	Gold, fine.	Silver, fine.
	Kilograms.	*Kilograms.*
1882	4,568	181,260
1883	5,658	211,590
1884	5,176	231,916
1885	5,777	257,410

Included in these totals is the quantity of gold and silver converted in this establishment into gilding fluids, oxide of silver, etc.; this quantity was approximately—

Years.	Gold.	Silver.	Years.	Gold.	Silver.
	Kilograms.	*Kilograms.*		*Kilograms.*	*Kilograms.*
1881	120	6, 500	1884	320	9, 400
1882	200	7, 200	1885	370	10, 000
1883	270	8, 100			

The gold refined by this establishment is derived chiefly from old scraps and in very small proportion from fresh bars. A great deal of material comes from Switzerland and Italy, and returns to those countries after refinement. Of the 5,777 kilograms gold refined in 1885, about 3,500 were perhaps used in Germany, and the rest sent to Russia, Italy, and Switzerland.

Of the 257,000 kilograms silver, 90,000 may have remained at home, 60,000 kilograms were sent to Russia, Italy, and Switzerland, while the remainder was sent partly to France, but mainly to India. The other two concerns mentioned above produced annually for the years 1882–1884 about 2,400 kilograms gold, fine, 93,000 kilograms silver, fine.

The refined gold and silver which these establishments bring into trade is chiefly used at once in the arts, and its extent, therefore, would alone indicate the extraordinary amount consumed in this way, even if we had no other information. A considerable part of the fine gold and fine silver produced by them goes abroad.

The statistics of the foreign trade of Germany give the following statements as to the import and export of uncoined gold and silver, and of articles made from those metals:

Years.	Gold bars and bullion.	Silver bars and bullion.	Articles made in whole or in part of precious metal.
1883.	*Marks.*	*Marks.*	*Marks.*
Imports	3, 828, 000	5, 161, 000	7, 978, 000
Exports	15, 077, 000	19, 425, 000	48, 450, 000
Excess of exports	11, 249, 000	14, 264, 000	40, 472, 000
1884.			
Imports	7, 380, 000	4, 947, 000	8, 642, 000
Exports	11, 724, 000	30, 889, 000	44, 870, 000
Excess of exports	4, 344, 000	25, 942, 000	36, 228, 000
1885.			
Imports	7, 951, 000	2, 131, 000	8, 965, 000
Exports	12, 102, 000	27, 216, 000	43. 855, 000
Excess of exports	4, 151, 000	25, 085, 000	34, 890, 000

The use of the precious metals in the arts in Austro-Hungary was stated at the International Monetary Conference of 1881 to average, for the years 1867–1880, 1,455 kilograms, gold, fine, and 25,346 kilograms silver, fine.

Precious metals were stamped officially as follows:

Years.	Gold articles.	Silver articles.	Years.	Gold articles.	Silver articles.
	Kilograms.	*Kilograms.*		*Kilograms.*	*Kilograms.*
1881	2,809	31,801	1884	3,404	35,512
1882	3,047	34,701	1885	3,180	31,793
1883	3,157	36,786			

The actual consumption is considerably larger, as is indicated, indeed, by the large declared export of gold and silver articles. There is also some consumption for gold and silver lace.

In the Netherlands domestic products of gold and silver were stamped as follows:

Years.	Gold.	Silver.	Years.	Gold.	Silver.
	Kilograms.	*Kilograms.*		*Kilograms.*	*Kilograms.*
1881	1,289.2	9,255.8	1883	1,149.0	8,364.6
1882	1,226.1	8,896.9	1884	1,114.7	8,187.2

In Belgium the stamping of gold and silver articles has been optional since July 1, 1869. In 1868 there were stamped gold articles containing 398.04 kilograms, and silver articles containing 3,651.4 kilograms.

An estimate of the industrial consumption for the Netherlands and Belgium together of 3,200 kilograms gold and 24,000 kilograms silver would probably be too high rather than too low.

According to the statements made by delegates at the International Monetary Conference of 1881, the average annual consumption of the precious metals during the eleven years 1870–'80, in Norway and Sweden, was—

	Gold.	Silver.
	Kilograms.	*Kilograms.*
Norway	22	1,604
Sweden	248	2,540

In Russia there were stamped in 1884 the following quantities of domestic and foreign articles: Of gold, 187 pud 38 solotnik, etc. = 2,079 kilograms; of silver, 3.475 pud 35 solotnik, etc., = 56,935 kilograms.

In earlier publications we ventured to make a general statement, with all possible reservations as to error, of the probable consumption of the precious metals in the arts in civilized countries on the average of recent years. We again present such a statement here, having heard of no well-founded objections to it. Surprising as the enormous extent of the estimated annual consumption of gold for ornaments and other purposes in the arts may seem, any doubts as to the probable correctness of the estimate will disappear on consideration of the increasing use of gold for ornament and for industrial purposes, with the growth of population and wealth. A similar increase is unfortunately not to be observed in the industrial use of silver:

Countries.	Gold.			Silver.		
	Gross consumption.	Deduct for old material.	Net consumption.	Gross consumption.	Deduct for old material.	Net consumption.
	Kilograms.	*Per cent.*	*Kilograms.*	*Kilograms.*	*Per cent.*	*Kilograms.*
United States	21,700	10	19,500	135,000	15	115,000
Great Britain	20,000	15	17,000	90,000	20	72,000
France	21,000	20	16,800	100,000	25	75,000
Germany	15,000	20	12,000	110,000	25	82,000
Switzerland	15,000	30	10,500	32,000	25	24,000
Netherlands and Belgium	3,200	20	2,900	30,000	20	24,000
Austro-Hungary	2,800	15	2,400	40,000	20	32,000
Italy	6,000	25	4,500	25,000	25	19,000
Russia	3,000	20	2,400	40,000	20	32,000
Other civilized countries	2,300	....	2,000	50,000	20	40,000
Total	110,000	....	90,000	652,000	....	515,000

Mr. Giffen, in his essay entitled Gold Supply: the Rate of Discount and Prices (Essays in Finance, second series, p. 46), says:

> The demand for gold for use in the arts is put by Dr. Soetbeer at nearly £10,000,000, but which is not half that amount, as far as I can judge, if we exclude what is taken for the arts out of the coinage of different countries, and which will be counted among the coinage requirements. Let the estimate for this purpose be £5,000,000.

This passage indicates a misconception that should be removed. Doubt may exist whether our estimate of the annual net consumption of gold in the arts at 90,000 kilograms be too high or too low; but it is certain that it is immaterial for the problem of prices and of standards of value whether newly produced and uncoined gold, or gold coin melted down, is used for these purposes. The increment to the monetary supply of gold from the annual gold production is only that sum by which the product exceeds the use in the arts, the export to the East, and any loss from accident. The quantity coined, as such, is not to be considered, since a large proportion of newly-coined gold pieces (such as the Russian half imperials) are at once melted and never get into circulation. If in any year gold is produced to the amount of 400,000,000 marks, and if in the same year 320,000,000 are consumed in the arts, exported to the East, or lost by abrasion, then no more than 80,000,000 marks remain for the increase of the monetary gold supply; and it is immaterial whether 30, or 50, or 70 per cent. of the gold used in the arts comes from melted coins, old or new. We are inclined to agree that half, or perhaps more, of the gold used in the arts (after deducting the gold articles remelted) is obtained by melting coins; but this is of no importance so far as the monetary gold supply and the level of prices are concerned. We have added this note because of the great importance of the manner and extent of the use of gold in the arts.

3. THE FLOW OF GOLD FROM CIVILIZED COUNTRIES.

Even if a higher estimate were put on the industrial consumption of the precious metals and on the loss by abrasion and accident, it would still be necessary to consider another factor affecting the proportion of newly-produced gold which remains available for the monetary supply of the civilized countries.

The great diminution, during the invasions of the Germanic tribes and during the centuries following those invasions, in the supply of gold and silver gathered in the Roman empire—a diminution which certainly set in to a striking extent—presents in itself difficult problems. But apart from this, it is no easy task to explain the disappearance from circulation of a considerable part of the enormous quantities of gold and silver which reached Europe from America in the second half of the sixteenth century and in the seventeenth century. We believe that the explanation is to be found mainly in the secreting and burying of coin during the periods of war and insecurity which lasted so long in many countries, especially in Germany, France, the Netherlands, the countries on the Danube, etc. Money at that time was the most important form of movable wealth, and the endeavor of its owners was, naturally, to save it from plunder by burying it. Our public prints have frequent notices of the discovery of larger or smaller sums of money, especially of Reichsthaler, which had obviously been buried in the times of the religious wars. Many such discoveries of coin must be kept secret; while the points at which such hoards are found form an insignificant part of the total area in which they may be hid. Many millions of marks of money may have been withdrawn forever from circulation in this way.

Since the close of the seventeenth century the burying of money has practically come to an end in Europe. In the countries on the lower Danube and in Turkey it has lasted, however, to our own times, as is proved, indeed, by the continued coinage of (Austrian) ducats.

But if the disappearance of money in civilized countries by its being buried may be fairly considered to be no longer of practical importance, the regular export of the precious metals to the East, on the other hand, has become in modern times of the highest importance. The flow of the metals to the East, it is true, has always been uninterruptedly affecting the monetary condition of the West; but in the last three centuries it has become an unusually important factor.

The East Indies have been the chief absorber of the precious metals from the civilized countries, and must therefore be specially considered in our discussion of this question.

Balance of trade of British India in the fifty years, 1835–'36 *to* 1884–'85.*

Fiscal years.	Imports of merchandise.	Exports of merchandise.	Excess of exports of merchandise.	Excess of imports of precious metals.	Amount of council bills sold.	Value of the rupee in pence.	Investments of capital by the Government for railroads, etc.
	Rupees.	*Rupees.*	*Rupees.*	*Rupees.*			*Rupees.*
1835–'36 to 1839-'40..	52, 846, 000	116, 454, 000	63, 607, 000	21, 759, 000	£1, 915, 957	23. 100	....
1840–'41 to 1844–'45..	86, 760, 000	149, 353, 000	62, 593, 000	27, 977, 000	2, 055, 971	22. 850	....
1845–'46 to 1849–'50..	90, 453, 000	158, 195, 000	67, 742, 000	15, 727, 000	2, 505, 773	22. 000	....
1850–'51 to 1854–'55..	115, 471, 000	193, 461, 000	77, 990, 000	32, 618, 000	3, 370, 728	23. 900	....
1855–'56 to 1859–'60..	178, 819, 000	267, 312, 000	88, 493, 000	132, 907, 000	992, 523	24. 325	....
1860–'61	234, 937, 000	329, 706, 000	94, 769, 000	95, 606, 000	797	....	....
1861–'62	223, 204, 000	363, 170, 000	139, 966, 000	142, 709, 000	1, 193, 728	23. 867	....
1862–'63	226, 324, 000	478, 596, 000	252, 273, 000	193, 983, 000	6, 641, 576	23. 920	....
1863–'64	271, 456, 000	656, 254, 000	384, 799, 000	216, 950, 000	8, 979, 521	23. 907	....
1864–'65	281, 509, 000	680, 270, 000	398, 761, 000	199, 188, 000	6, 789, 473	23. 876	....
1865–'66	295, 992, 000	654, 911, 000	358, 919, 000	243, 931, 000	6, 966, 116	23. 835	....
1866–'67	290, 387, 000	418, 600, 000	128, 213, 000	108, 054, 000	5, 067, 589	23. 064	....
1867–'68	357, 058, 000	508, 741, 000	151, 683, 000	102, 034, 000	4, 137, 285	23. 190	6, 025, 000
1868–'69	359, 901, 000	530, 622, 000	170, 720, 000	137, 604, 000	3, 705, 741	23. 197	13, 706, 000
1869–'70	329, 275, 000	524, 714, 000	195, 439, 000	129, 124, 000	6, 980, 122	23. 267	25, 996, 000
1870–'71	344, 691, 000	553, 318, 000	208, 627, 000	32, 241, 000	8, 443, 509	22. 495	11, 678, 000
1871–'72	320, 918, 000	631, 858, 000	310, 940, 000	100, 977, 000	10, 310, 339	23. 126	16, 285, 000
1872–'73	318, 746, 000	552, 508, 000	233, 761, 000	32, 585, 000	13, 939, 095	22. 754	21, 846, 000
1873–'74	338, 360, 000	549, 960, 000	211, 600, 000	38, 785, 000	13, 285, 678	22. 351	35, 533, 000
1874–'75	362, 221, 000	563, 592, 000	201, 371, 000	65, 157, 000	10, 841, 614	22. 156	42, 496, 000
1875–'76	388, 873, 000	580, 915, 000	192, 042, 000	31, 005, 000	12, 389, 613	21. 625	42, 706, 000
1876–'77	374, 406, 000	610, 139, 000	235, 733, 000	74, 062, 000	12, 695, 799	20. 508	38, 003, 000
1877–'78	414, 642, 000	652, 223, 000	237, 581, 000	151, 445, 000	10, 134, 455	20. 791	47, 911, 000
1878–'79	378, 006, 000	609, 375, 000	231, 369, 000	30, 745, 000	13, 948, 565	19. 794	43, 819, 000
1879–'80	411, 660, 000	672, 124, 000	260, 464, 000	96, 202, 000	15, 261, 810	19. 961	130, 952, 000
1880–'81	531, 168, 000	745, 806, 000	214, 638, 000	75, 478, 000	15, 239, 677	19. 956	92, 972, 000
1881–'82	491, 134, 000	819, 685, 000	328, 551, 000	102, 230, 000	18, 412, 429	19. 895	39, 520, 000
1882–'83	520, 957, 000	834, 851, 000	313, 894, 000	124, 111, 000	15, 120, 521	19. 525	46, 651, 000
1883–'84	552, 793, 000	881, 761, 000	228, 967, 000	118, 687, 000	17, 599, 805	19. 536	40, 201, 000
1884–'85	557, 031, 000	832, 553, 000	275, 522, 000	119, 176, 000	13, 758, 909	19. 308	†57, 324, 000

*** Fiscal years are from April 1 to March 30, but before 1867 from April 30 to May 1. Between 1835–'36 and 1855–'56 averages for five-year periods are given. The figures are taken from the official statements made by the Indian Office to Mr. Palgrave for his Memorandum in the third report of the Royal Commission on the depression of trade, 1886.**

† Estimate.

Import and export of the precious metals, and other statistics for British India, in the fifty years 1835–'36 *to* 1884–'85.

Fiscal years.	Import of silver.	Export of silver.	Excess of imports of silver.	Excess of imports of gold.	Total coinage of silver.	Coinage of silver, deducting recoinage.	Registered debt in India and England.
	Rupees.	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*	
1835–'36 to 1839–'40	20, 966, 000	2, 539, 000	18, 427, 000	3, 332, 000	47, 902, 000	33, 235, 000	£30, 347, 177
1840–'41 to 1844–'45	31, 593, 000	6, 877, 000	24, 716, 000	3, 261, 000	46, 881, 000	37, 616, 000	35, 255, 247
1845–'46 to 1849–'50	18, 698, 000	12, 763, 000	5, 935, 000	9, 793, 000	33, 800, 000	27, 072, 000	43, 653, 890
1850–'51 to 1854–'55	31, 552, 000	9, 706, 000	21, 846, 000	10, 772, 000	44, 818, 000	37, 972, 000	48, 749, 866
1855–'56 to 1859–'60	108, 929, 000	8, 204, 000	100, 725, 000	32, 182, 000	97, 186, 000	94, 998, 000	65, 732, 248
1860–'61	64, 346, 000	11, 066, 000	53, 280, 000	42, 326, 000	52, 971, 000	51, 917, 000	94, 557, 605
1861–'62	97, 615, 000	6, 751, 000	90, 865, 000	51, 844, 000	74, 700, 000	70, 704, 000	98, 577, 970
1862–'63	136, 274, 000	10, 772, 000	125, 502, 000	68, 482, 000	93, 554, 000	92, 515, 000	96, 827, 787
1863–'64	140, 372, 000	12, 404, 000	127, 967, 000	88, 983, 000	115, 567, 000	114, 797, 000	90, 946, 635
1864–'65	114, 883, 000	14, 095, 000	100, 788, 000	98, 400, 000	109, 113, 000	104, 859, 000	90, 727, 082
1865–'66	201, 844, 000	15, 157, 000	186, 687, 000	57, 245, 000	146, 394, 000	145, 071, 000	90, 508, 133
1866–'67	86, 554, 000	16, 924, 000	69, 631, 000	38, 423, 000	61, 831, 000	61, 189, 000	93, 578, 890
1867–'68	69, 994, 000	14, 055, 000	55, 940, 000	46, 095, 000	43, 851, 000	43, 133, 000	95, 481, 275
1868–'69	99, 790, 000	13, 780, 000	86, 010, 000	51, 594, 000	42, 693, 000	42, 070, 000	96, 194, 642
1869–'70	82, 644, 000	9, 441, 000	74, 203, 000	55, 920, 000	75, 105, 000	74, 736, 000	101, 747, 898
1870–'71	26, 622, 000	17, 203, 000	9, 419, 000	22, 821, 000	17, 440, 000	17, 182, 000	104, 326, 385
1871–'72	80, 000, 000	14, 677, 000	65, 324, 000	35, 653, 000	17, 093, 000	16, 904, 000	106, 959, 466
1872–'73	19, 132, 000	12, 191, 000	7, 151, 000	25, 434, 000	40, 085, 000	39, 809, 000	105, 470, 985
1873–'74	41, 437, 000	16, 479, 000	24, 958, 000	13, 826, 000	24, 000, 000	23, 700, 000	107, 534, 907
1874–'75	60, 518, 000	14, 096, 000	46, 422, 000	18, 735, 000	49, 410, 000	48, 969, 000	118, 446, 992
1875–'76	34, 643, 000	19, 090, 000	15, 554, 000	15, 451, 000	25, 826, 000	25, 502, 000	122, 570, 014
1876–'77	99, 924, 000	27, 935, 000	71, 989, 000	2, 073, 000	62, 929, 000	62, 711, 000	127, 320, 159
1877–'78	157, 765, 000	11, 002, 000	146, 763, 000	4, 681, 000	162, 968, 000	161, 803, 000	134, 631, 553
1878–'79	55, 937, 000	16, 230, 000	39, 707, 000	8, 962, 000	72, 784, 000	72, 108, 000	138, 868, 043
1879–'80	96, 050, 000	17, 353, 000	78, 697, 000	17, 505, 000	103, 419, 000	102, 570, 000	151, 728, 065
1880–'81	53, 162, 000	14, 236, 000	38, 926, 000	36, 552, 000	44, 107, 000	42, 497, 000	157, 388, 878
1881–'82	64, 664, 000	10, 873, 000	53, 790, 000	48, 440, 000	29, 249, 000	21, 863, 000	156, 795, 109
1882–'83	83, 580, 000	8, 778, 000	74, 802, 000	49, 309, 000	73, 387, 000	65, 085, 000	159, 274, 460
1883–'84	74, 085, 000	10, 024, 000	64, 062, 000	54, 625, 000	41, 420, 000	36, 634, 000	161, 300, 221
1884–'85	91, 100, 000	18, 644, 000	72, 456, 000	46, 719, 000	60, 264, 000	57, 741, 000	*162, 454, 748

* Estimated.

NOTE.—In 1878–'79 the export of gold from India, by way of exception, exceeded the imports by the sum of £896, 173.

In the Indian circular of J. Westwood Thompson, of January 1886, the export of precious metals to the East during the thirty-two calendar years from 1853 to 1885 is given as follows:

	Gold.	Silver.
From England by Peninsular and Oriental Steam Navigation Company steamers	£43, 312, 914	£209, 515, 368
From Mediterranean ports by Peninsular and Oriental steamers and by the Messageries Maritimes	48, 167, 090	68, 932, 856
Total	91, 480, 004	278, 448, 224

In the calendar year 1885, council bills and telegraphic transfers amounted to 14, 27, 69, 113 rupees, yielding £11, 103, 931. The total of council bills from 1861–'62 to 1884–'85, was 2, 85, 74, 40, 033 rupees, yielding £252, 421, 911.

During the eleven years from 1874 to 1884, the Indian government spent on productive public works, mainly railways, the following sums:

Year.	Amount.	Year.	Amount.	Year.	Amount.
1874	£5, 625, 184	1878	£7, 123, 677	1882	£9, 806, 226
1875	6, 081, 551	1879	7, 123, 199	1883	10, 312, 086
1876	6, 258, 597	1880	7, 773, 425	1884	10, 522, 022
1877	6, 574, 515	1881	9, 499, 533		

NOTES TO THE TABLES ON THE BALANCE OF TRADE, AND THE MOVEMENT OF THE PRECIOUS METALS IN BRITISH INDIA, 1836–1885.*

The preceding tables take account of factors of essential importance for the silver question, and the present and future of the question of standards. Many of those in whose hands the present publication will come will understand without further aid the importance and connection of these long columns, but for most readers a detailed consideration may not be superfluous. What follows rests in the main on our earlier publications.

British India, inclusive of the native states, had, by the census of 1881, an area of 1,378,044 square miles. It had a population of 253,982,595, of whom 198,790,853 were directly under British rule on 868,314 square miles of territory. (Ceylon and the Straits Settlements are not included.) When we consider the economic condition and history of India, this enormous population must always be kept in mind. India is on the whole a fertile country, and produces much more than is consumed within its limits; but the domestic production of the precious metals is insignificant. As far back as our knowledge goes, the export of commodities from India has considerably exceeded the import into the country, and the consequence has been an almost continuous inflow of the precious metals. India has, therefore, in a higher degree than almost any other country a so-called favorable balance of trade. Pliny, who died 79 A. D., complains that India absorbed from the Roman empire no less than 5,000,000 sesterces per year—that is, no less than 10,800,000 marks. In a book of travels published in 1699, by a Frenchman, Bernier, who lived for some time at the court of Delhi, and made a report on the commercial relations of India to Colbert, the great French statesman, it is said: "The gold and silver of the world, after circulating for some time, finally flow to India, as into an abyss from which there is no return." Alexander von Humboldt calculated the flow of silver to India and the rest of Eastern Asia at about 25,000,000 piasters annually at the close of the eighteenth century. Humboldt's estimate seems too high, when compared to the recorded shipments by the English and Dutch East India Companies. But this is hardly the case with the calculation of Mr. Van den Berg, who concludes that for the whole of the eighteenth century the average annual export of silver from Europe to Eastern Asia was about 23,000,000 marks. We believe, however, that this last estimate is too low. It should be noted that during the seventeenth and eighteenth centuries considerable sums of gold, whose value was then considerably lower as compared to silver, were exported from Eastern Asia to Europe.

During the first half of the present century the flow of precious metals to India has gone through several phases. During the years from 1801 to 1813 the precious metals imported into Calcutta, Bombay, and Madras amounted to about 40,000,000 marks per year; and during the period immediately following the abolition of the East India Company's monopoly it rose to about 90,000,000 marks per year. Thereafter a great decrease set in for a series of years, and about 1832 the net import of the precious metals into India became for a while practically nothing. Then for the years from 1834 to 1850 it maintained itself with no great variations at about 50,000,000 marks yearly, at a time when the total production of silver was from 110,000,000 to 140,000,000 marks.

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*In the following notes the fiscal years of India are indicated by that year in which the fiscal year ends—that is to say, instead of 1835–'36 the simple figure 1836 is used. Where calendar years are in question this is expressly stated. R signifies rupees.

Since 1851 the balance of trade in India, and the export and import of commodities, have been, for longer periods, as follows:

Years.	Export of merchandise.	Imports of merchandise.	Excess of exports.
	Rupees.	*Rupees.*	*Rupees.*
1851–'60	230, 400, 000	147, 200, 000	83, 200, 000
1861–'70	514, 600, 000	287, 000, 000	227, 600, 000
1871–'80	597, 600, 000	365, 300, 000	232, 300, 000
1881–'85	822, 900, 000	530, 600, 000	292, 300, 000

It thus appears from the official statistics that the excess of exports of merchandise from British India amounted, in the thirty-five years from 1851 to 1885, to the colossal sum of 6,893,000,000 rupees.

The export and import of commodities and the excess of exports show a considerable growth in these thirty-five years, as appears in the following statement by per cents:

Years.	Exports.	Imports.	Excess of exports.
1851–'60	100. 0	100. 0	100. 0
1861–'70	223. 3	195. 0	273. 3
1871–'80	259. 4	248. 2	279. 2
1881–'85	257. 2	360. 5	351. 3

By value, the average exports of merchandise during the years 1881–'85 exceeded the average exports during the years 1851–'60 by no less a sum than 209,100,000 rupees.

These statements refer only to the trade by sea. The statistics in regard to the overland trade of British India are exceedingly incomplete.

The following table in regard to some of the more important articles of India's foreign trade indicates which were the chief factors in this extraordinary increase of trade:

Exports from British India.

Articles.	1869–'74, average.	1885.
	Rupees.	*Rupees.*
Cotton	174, 100, 000	133, 000, 000
Cotton yarn	1, 400, 000	25, 100, 000
Cotton goods	12, 300, 000	20, 400, 000
Indigo	34, 100, 000	40, 700, 000
Rice	46, 200, 000	71, 900, 000
Wheat	2, 700, 000	63, 100, 000
Hides and skins	23, 600, 000	49, 400, 000
Jute, raw	32, 500, 000	46, 600, 000
Jute, manufactured	2, 200, 000	15, 400, 000
Seeds containing oils	24, 900, 000	107, 500, 000
Sugar	3, 600, 000	7, 900, 000
Tea	14, 100. 000	41, 400, 000
Total	371, 700, 000	622, 400, 000

Imports into British India.

Articles.	1869–'74, average.	1885.
	Rupees.	*Rupees.*
Coal	5,500,000	12,900,000
Cotton yarn	27,500,000	33,600,000
Cotton goods	147,700,000	207,100,000
Machinery	5,900,000	15,700,000
Metal manufactures	24,400,000	49,800,000
Oil	500,000	12,300,000
Silk goods	4,800,000	11,200,000
Railroad supplies	9,100,000	28,300,000
Sugar	6,000,000	21,400,000
Woolen goods	5,200,000	10,900,000

We turn now from the statistics of commodities to those of the export and import of the precious metals. In the general tables printed above we have confined ourselves, so far as gold is concerned, to the net import, that is to say, the import after deducting the export; since the export of gold from India, barring exceptional circumstances such as occurred in 1879, is unimportant. The export of gold on the average of the fifty years from 1836 to 1885 was not quite 7 per cent. of the import of gold during the same time; that is, there were only 91,900,000 rupees exported, against 1,370,800,000 rupees imported. So far as silver is concerned, the re-export is more important. In the last fifty years 553,700,000 rupees were exported, as against 3,191,800,000 rupees inported. But this re-export of a considerable portion of the imported silver takes place in the main to other countries of eastern Asia, and very little of it finds its way back into international trade.

In the thirty-five years from 1851 to 1885 the import and export of the precious metals in British India showed the following annual averages in the periods mentioned:

Years.	Gold.			Silver.		
	Imports.	Exports.	Excess of imports.	Imports.	Exports.	Excess of imports.
	Rupees.	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*
1851–'60	22,036,000	559,000	21,477,000	70,240,000	8,955,000	61,285,000
1861–'70	61,712,000	1,781,000	59,931,000	109,432,000	12,445,000	96,987,000
1871–'80	21,089,000	6,367,000	14,722,000	67,224,000	16,626,000	50,598,000
1881–'85	47,742,000	613,000	47,129,000	73,318,000	12,513,000	60,805,000

There is no tax on the export and import of the precious metals in British India, and the trade concentrates itself in the main in a few ports; the correctness of these important statements, therefore, may be assumed.

To assure sound conclusions it is necessary to take account of the places from which India imports her precious metals, since a considerable part of the import comes from China and is derived from the production in that country, which we have not considered in our statistics of the production of the precious metals.

Imports of gold and silver into British India from the countries named.

Years.	Gold.				Silver.			
	England.	Australia.	China.	Other countries.	England.	China.	Other countries.	Total.
	Rupees.	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*
1880........	3, 021, 000	80, 000	11, 842, 000	5, 561, 000	47, 140, 000	28, 237, 000	20, 673, 000	96, 050, 000
1881........	10, 478, 000	2, 912, 000	15, 487, 000	7, 844, 000	28, 646, 000	1, 606, 000	22, 910, 000	53, 162, 000
1882........	10, 982, 000	13, 219, 000	13, 770, 000	10, 593, 000	37, 680, 000	15, 125, 000	11, 859, 000	64, 664, 000
1883........	13, 932, 000	14, 257, 000	11, 679, 000	11, 083, 000	43, 905, 000	12, 658, 000	27, 017, 000	83, 580, 000
1884........	13, 285, 000	19, 206, 000	13, 605, 000	8, 509, 000	54, 579, 000	5, 529, 000	13, 977, 000	74, 085, 000
1885........	14, 973, 000	12, 787, 000	9, 258, 000	10, 764, 000	66, 834, 000	11, 265, 000	13, 001, 000	91, 100, 000

The re-export of silver from British India takes place mainly to Mauritius, Ceylon, the Straits Settlements, and the Persian Gulf.

What use has been made of the enormous sums of gold and silver that remain in India?

Of the import of gold, a very small part has been coined into domestic gold coin. The total coinage for the fifty years since 1835 amounts to no more than 2,352,399 rupees; the rest of the gold, about 1,276,000,000 rupees, has been used for ornament, or has been hoarded, in the form of British and Australian sovereigns, by the richer natives and in the treasuries of Indian princes. The gold that once has flowed to India is lost, almost without exception, to trade. The natives are careful watchers of the bullion market, and have not failed to note that in recent times the value of silver at the bazars has become less as compared to gold. Ornaments and hoards of silver are therefore less highly prized then in former years. In India, as elsewhere, gold is taking the place of silver.

Of the silver imported to India the great mass has been coined into rupees. A considerable part of this is still in circulation, in the Government treasuries, or in the banks; the rest has been converted, either directly or by smelting down rupees, into articles of ornament.

As the totals show, the net import of silver into British India for the period from 1836 to 1885 has reached the enormous sum of 2,638,100,000 rupees. The coinage of silver has reached the sum of 2,992,800,000 rupees, of which 242,300,000 rupees were got by resmelting older Indian coins.

It has been supposed that the amount of silver now in circulation in India, inclusive of the sum of nearly 222,000,000 rupees in Government treasures and in banks, may be stated at about 2,000,000,000 rupees. We believe that this estimate is much too high. The many continued assurances sent to us in regard to the extraordinary extent to which silver is used for ornament and is hoarded, lead us to consider it highly improbable that no more than 24 per cent. of the imported silver has disappeared in this way. The childlike habit of hoarding and of burying coin, which resulted very naturally from insecurity of former times, maintains itself to our own day in many parts of the Indian continent, and has maintained itself obstinately in face of all the influences of civilization. It is true that the beneficent effect of British rule and the general progress of civilization have caused it to diminish in some districts; but, again, the circulation of silver coins has been pushed into channels formerly not reached by it and where there was previously no opportunity for hoarding. Wages have risen, the use of money has extended, and, since the needs of the population have not increased in proportion, more money is available for hoarding. In many parts of the densely populated land no means exist for securely investing money, confidence is weak, and the hoarding of coin is the only safe form of saving. Moreover, an Oriental population is not easily moved from its old habits.* Considering the habit of hoarding, and the fact that the circulation of rupees is in many districts very small, some observers have assumed that the probable present monetary circulation of India is no more than half the sums that have been coined. This is no more than a guess, yet the contrary statement of a circulation of about 2,000,000 rupees is also a guess. The same difference of opinion appears when it is stated, on the one hand, that India is in a condition to absorb in time any quantity of silver not elsewhere disposable, and on the other hand, in the assertion that the demand for silver in India, other things remaining the same, can be satisfied in future by about 30,000,000 rupees per year.

The great importance of the flow of the precious metals to India induces us to add extracts from two recent essays whose author has practical acquaintance with the condition of India.

In an essay in the London Bankers' Magazine, May, 1886, it is said: "The continued fall in the rate of exchange on India has been accom-

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* In answer to inquiries in regard to the use of money and of the precious metals in ordinary intercourse in India, I received in May of the present year the following communications from private friends. They are based on their own personal observation in the interior. They confirm the remarks in the text, and contain matter which does not readily find its way into books and official reports, yet contributes to the understanding of the actual state of affairs.

In a letter from the Godaveri district it is said: "Barter prevails in the rural population. In the villages rice is the common medium of exchange. Even goldsmiths, carpenters, and other mechanics get their wages in rice. The only exception is in the case of the grave-digger, who gets, besides his quantum of rice, 5 dubs for every grave. In the cities and in the larger villages payments are made in coin. The ordinary rate of wages for a man is 3 annas in the city, 2 annas in the country; a woman gets half as much. Wages were formerly even lower. Ten years ago a cooly got no more than 2 annas per day. The increase in wages which has taken place, however, is offset by a rise in prices. Rice, wheat, etc., have greatly risen in price in the last twenty years, though in the last ten years they have risen by no more than one-tenth.

"Money is usually in the hands of the Brahmins and of the traders. The cooly either has no money or has only enough for paying his daily expenses, so that the few dubs that he receives are immediately paid out for his food. If he happens to receive wages enough to live on for two days, he simply stops work so long. The cooly has no thought of saving or of accumulating money. The sole possessions of the ordinary Paria are a miserable mud hut, roofed with palm leaves, a dirty wife and equally dirty children, and one or two rice-pots and a water-jug. He owns the very minimum of implements for daily use. When he is hired, tools almost invariably must be loaned him.

"Hardly any but copper coins appear in ordinary trade. Rupees and other silver coins occasionally occur, but sparingly. Even well-to-do people have comparatively few rupees. These are very largely melted and converted into articles of ornament. The burying of silver, which was formerly common, is decreasing. Occasionally melted lumps of silver, whose owner has died and taken the secret of his treasure to the grave with him, are found in the fields. The hoarding of silver, as already said, constantly becomes less common, and money is usually converted into articles of ornament.

"Gold coins are not money, and the sovereigns and the still rarer mohurs are bought and sold as bullion, and melted for conversion into articles of ornament. The extent to which this is done is incredible. At a well-ordered wedding among the higher classes the bride must contribute jewelry to the value of 1,000 rupees and the bridegroom to the value of 2,000 rupees. This is the whole of their property. Less well-to-do people, of course, have less, but the more jewelry there is, the finer is the wedding. Debts are often contracted for this purpose which remain unpaid life-long. It is not so much the jewels in the gold, as the gold itself, by which the Hindoo is attracted irresistibly. Gold chains worth 1,200 rupees are often worn. Women even of the lower classes are seen with ornaments consisting of sovereigns, or of 20 and 10 franc pieces. When I asked one of these women why she carried these gold pieces about her neck, she asked me why I bought a watch and a piano. The staple subject panied by great changes in the trade between India and Great Britain, The export of commodities from India has risen greatly, but the export from Great Britain to India has risen no less, while at the same time a considerable fall in prices has taken place for Indian articles of export and import. The export and import trade of a country are always closely connected. In the case of India there is a complication, because the Indian Government has annually to send large sums to England. These sums are due for interest on the Indian debt and on the railroad loans guaranteed by the Government. Besides, there are considerable payments for purchases in England on Indian account. Lastly, Europeans employed in India annually remit large amounts to their families in Europe, and remittances are made for pensions, etc. All these payments are so many debts due by India. They must be paid by an export of commodities from India, and a natural consequence is that exports considerably exceed the imports.

"If we compare the average of the last five-year period, 1881–'85, with the average of the period 1886–'70, the excess of imports shows an increase of 91,320,000 rupees, while at the same time the import of gold shows about the same increase, and the net import of silver shows a de-

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of conversation for the women is how much jewelry this or that woman has, while that of the men is about the amount of gold owned by this or that neighbor, and the amount of money he has loaned out. Women wear by far most of the jewelry; as a rule, silver on the ankles and arms, and gold about the head, in the ears and nose, around the neck, and on the fingers. A native trader told me that the capital which he had lying idle in the form of gold ornaments would bring him 12 rupees per month. When I proposed to him that he should put this sum into the savings-bank, he rejected the proposition with the answer that he would have no more friends, as he would no longer look 'neat and nice.' A native judge, an educated and sensible man, told me that he had given his wife ornaments worth 3,000 rupees, but that she was always begging him for more, because this or that neighbor had more of one or another sort than she, and she could not endure another woman looking 'nicer.' He had told her that she had a piano and other European luxuries; but she wanted gold. He had advised the traders and the prominent men of the place to invest their gold in good railroad securities, but he had been laughed at as much as when he had bought his piano. This same judge is now building a house in which he is using European methods as much as possible; but he was willing to put no ventilators into it, as thieves might creep in through them and steal his gold. 'You can leave everything else unprotected, he said, 'even the most valuable things are never stolen. The only thing that the Hindoos, especially the women, long for, is gold.'"

In another letter, referring mainly to the province of Behar, it is said: "The daily laborers and the mechanics in the villages get their pay mainly in kind, in rice, wheat, etc. In the cities they get money. The daily wages of a laborer in the cities are now about 3 annas. In the last ten years they have risen about half. But the prices of rice and wheat have also risen. What cost a rupee ten years ago now costs a rupee and 5 annas or a rupee and 6 annas. Savings are usually invested in silver ornaments, especially bracelets and rings about the feet, for women. Richer people buy gold ornaments. The burying of treasures, which was formerly common, takes place less and less, as the fear of robbery has diminished. In the larger cities ornaments are bought ready made; in the villages and smaller cities they are made from rupees melted down. The well-to-do hoard their savings, not only in articles of ornament, but in rupees. Rich people deposit their money in the local savings-banks or else lend it at interest. Those who are in Government service buy public securities.

"Gold coins are not in circulation, being used chiefly at weddings and other festivals as presents. The last Maharajah of Burdwan had accumulated a treasure of 20,000,000 rupees in gold coins. The English Government after his death induced his widow and mother to exchange the gold for public securities, but the natives regarded this as nothing less than an act of violence."

Private letters such as these, sent me from India by Germans, who have no interest in distorting facts one way or another, may serve to explain that large import of gold into India which astonishes so many observers and seems to be a phenomenon of no temporary duration. Mr. Claremont J. Daniel, in his volumes Gold in the East, (London, 1880), and the Gold Treasure in India (London, 1884), states his belief that the introduction of a gold or double standard in British India would not increase the scarcity of gold, but would rather diminish it, since the enormous sums now held there would then return to the channels of trade.

crease by about 33,500,000 rupees. Considering the increase in the production of silver and the fall in the price of silver, we might have expected an increase rather than a diminution in the import of silver. The balance of payments has therefore been maintained in some other way, and this has taken place by the increase in India council bills.

"The bills of exchange sold by the Indian Government in London were, on the annual average, as follows:

Years.	Average.	Years.	Average.
1866–'70	£5, 371, 371	1876–'80	£12, 886, 048
1871–'75	11, 364, 047	1881–'85	16, 026, 268

"This method of payment, the result of the increasing debt of India to England, has risen in the last twenty years by more than £10,000,000 per year. In the same period the import of the precious metals to India has declined by nearly £3,500,000.

"The rate of council bills during the years 1866–'70 averaged 23.31 pence per rupee, and the price of silver in London averaged 60.78 pence per ounce. In 1885 the averages were only 19.3 pence and 49.94 pence.

"The increasing supply of council bills has depressed the price of silver, and the fall in the price of silver has again depressed the rate of exchange.

"We have already mentioned the extraordinary increase of the council bills which replace the export of silver to India, and have mentioned the increasing debt of India to England as its cause. It is true that this cause has been, upon the whole, a most important one; but there is still another reason why it should have increased in effect in the last decade. The explanation is that in former periods the quantity of council bills remained smaller because the Indian Government was raising in England loans for Indian railways, and from the yield of these loans deducted certain sums which otherwise would have had to be paid by council bills. As loans ceased to be contracted, it became necessary to resort to a larger issue of council bills."

We quote now, with some condensation, extracts from the concluding passages of an excellent book recently published in Calcutta, by Mr. Barbour, secretary of the treasury for India (The Theory of Bimetallism and the Effects of the Partial Demonetization of Silver on England and India):

The common opinion that India can absorb any quantity of silver, and that the absorption is only a question of the price of Indian products, is not founded. In the years from 1836 to 1855 the import of silver to India was moderate, about sufficing to meet the demand. From 1856 to 1866 India imported much more silver, partly in consequence of the heavy loans resulting from the Sepoy insurrection and from the building of railroads, partly because of the extraordinary demand for cotton during the American civil war. From 1867 to 1876 India imported comparatively little silver. From 1877 to 1885 the import rose again, chiefly in consequence of the favorable balance of trade. India needs in any event an annual import of silver of about 30,000,000 rupees; possibly twice that sum. It is not likely that this amount will be exceeded in the future, unless there be great Government loans or unusual contingencies. No doubt cheap freights to Europe and the extension of railroads and canals will stimulate exports, and especially the export of wheat; yet there is a limit to the possibility of exports from India. Moreover, the quantity of council bills is likely to increase on account of interest on the Indian debt, and a general rise of the payments due by the Indian Government in London, and the remittances of silver would be dimished by this cause.

Since the depreciation of silver no rise has taken place at Indian ports in the prices either of articles of export or import. Yet an effect of the arbitrary depression of silver on Indian prices may exist in the prevention of a fall in prices that otherwise would have taken place.

Although British India is by far the most important absorber of the precious metals, the other countries of eastern Asia must also be considered. In former years, when the export of opium from India to China had not reached so great an extent, silver was exported to China in large quantities, and there went into circulation or was hoarded. A considerable flow of the precious metals still takes place from the civilized countries to China, partly by sea and partly by way of Kiachta; for the value of the tea, silk, and other products exported far exceeds that of the European and American productions which are imported. A large part of the coin brought into China is re-exported to India in exchange for opium, cotton, etc. The rest remains in circulation, or is hoarded, within the country. The case is the same with the gold which Chinese workmen bring from California and Australia.

The statement in the Deutsches Handelsarchiv for July, 1886, gives the following figures of the recorded import and export of the precious metals in China:

Exports and imports of precious metals in China.

Years.	Imports.			Exports.		
	Sycee, Shanghai taels.	Mexican dollars.	Gold, Shanghai taels.	Sycee, Shanghai taels.	Mexican dollars.	Gold, Shanghai taels.
1881	14,109,488	13,406,037	1,350,392	13,835,636	5,516,570	820,464
1882	23,908,944	18,471,967	1,325,086	17,884,084	12,427,371	881,715
1883	14,203,193	10,674,167	1,426,173	10,733,355	8,276,033	1,224,629
1884	15,850,067	12,410,787	302,476	14,348,048	4,236,585	869,708
1885	14,080,668	8,111,205	2,617,426	22,679,887	2,888,527	4,755,051
Total	82,132,360	63,074,163	7,021,553	79,481,010	33,345,086	8,551,567
Average	16,430,472	12,614,833	1,404,311	15,869,202	6,669,017	1,710,313

Converting the Sycee silver and the Mexican dollars into kilograms fine, we get for the five years, 1881–'85, an average import of silver into China, 868,800 kilograms; export of silver from China 706,200 kilograms, or an annual excess of imports of 163,500 kilograms.* On the other hand, the exports of gold exceed the imports.

In the report accompanying these figures it is said:

> The general feeling of insecurity among the well-to-do classes prevents them from investing their property in any income-yielding form. Although enormous sums are undoubtedly saved, it is impossible to give any figures as to their amount. In so-called good times a part of these hoards are turned into the banks for investment, but the least feeling of coming insecurity causes them immediately to disappear.

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* *Sic* in the original.

The exports of the precious metals from the United States to China (inclusive of Hong-Kong) and to Japan, and the exports from these countries, are given as follows in the official statistics:

Fiscal years.	Exports to China.	Imports from China.	Exports to Japan.	Imports from Japan.
1871	$3,571,647	$1,950	$1,154,168	$89,838
1872	5,999,335	700	3,580,053	2,636,659
1873	7,154,549	181	6,890,871	1,349,580
1874	9,381,041	39,772	822,182	20,910
1875	6,603,369	6,840	....	12,733
1876	7,929,589	6,908	2,070	38,123
1877	15,430,865	10,952	1,672,538	2,372
1878	16,212,575	7,559	527,057	95,078
1879	7,431,362	134,635	....	49,322
1880	6,512,828	90,991	270,500	441,941
1881	3,478,602	41,179	2,468,535	904,008
1882	4,450,210	36,005	454,678	712,970
1883	7,140,480	192,801	536,916	1,061,550
1884	9,341,559	5,260	1,046,200	655,057
1885	14,573,233	1,529	1,487,846	541,368

The exports of precious metals from the United States to China and Japan consist almost exclusively of silver, whereas the imports consist mainly of gold. There is, however, an import of trade dollars, of which a considerable quantity have found their way back to the United States, where they are sold at a higher rate than their intrinsic value. The trade takes place almost exclusively by way of San Francisco. In earlier publications we estimated the annual average export of silver from San Francisco to Asia for the period 1861–'70 at 88,000 kilograms, and for the period 1871–'80 at 215,000 kilograms.

Westwood Thompson's Indian Circular states the export of the precious metals from San Francisco to China as follows:

Years.	Mexican and trade dollars.	Silver in bars.	Gold.
1884	$8,931,207	$3,986,797	$335,114
1885	7,562,152	4,727,132	477,320

The export of the precious metals from Russia to China, by way of Kiachta, is given as follows in the tables separately published on this subject:

Years.	Silver.	Gold.	Years.	Silver.	Gold.
	Rubles.	*Rubles.*		*Rubles.*	*Rubles.*
1872	432,000	942,000	1878	2,628,579	526,572
1873	70,000	1,063,000	1879	2,323,847	306,701
1874	44,000	1,003,000	1880	1,570,874	1,344,826
1875	29,595	1,621,200	1881	....	....
1876	160,294	824,831	1882	3,088,822	387,113
1877	681,950	82,010	1883	1,862,271	152,403

The exported gold consists of half-imperials. In the exported silver the proportion of Russian silver coins has become small, and silver bars are chiefly used. The great differences in different years are surprising. The average annual flow of the precious metals in this channel in the period 1872–1883 amounted to about 900 kilograms gold and 21,000 kilograms silver.

The Netherlands exported to their colonies between 1842 and 1880 silver coins as follows:

Periods.	Exports.	Equivalent in fine silver.
	Florins.	*Kilograms.*
1842–'60	98, 602, 127. 50	931, 790
1861–'70	150, 634, 456. 00	1, 423, 496
1871–'80	83, 206, 075. 00	786, 297
Total	332, 442, 658. 50	3, 141, 583

Assuming the sums that came back to be 3½ per cent. of the total, we get for the thirty-eight years a net export of silver to the Dutch East Indies of 3,031,600 kilograms of silver fine, making an annual average of about 80,000 kilograms. This estimate, derived from the mint at Utrecht, does not tally with the statements which Mr. Van den Berg, president of the Java bank, at Batavia, presents on the flow of coin between the Netherlands and their East Indian colonies. This gentleman gives the following estimates:

	Exports from the Netherlands to East India.	Exports from the East Indies to the Netherlands.
	Florins.	*Florins.*
1875	4, 250, 000	2, 480, 000
1876	3, 500, 000	8, 339, 000
1877	17, 500, 000	....
1878	10, 000, 000	6, 720, 000
1879	6, 000, 000	3, 050, 000
1880	3, 000, 000	3, 930, 000
1881	....	1, 247, 000
Total	44, 250, 000	25, 766, 000

The re-export of Dutch silver from Java, which of course does not extend to subsidiary coins, is to be explained in two ways. The establishment of the gold standard in Holland has given to silver since 1875 a nominal value exceeding its intrinsic value. The absorption of the silver imported into Dutch East India by hoarding and melting on the part of the natives has ceased. Before 1875 this absorption of silver took place to a remarkable extent; and so far as this earlier period is concerned the mint statement given above may be considered correct.

The gold and silver which is coined in Austrian mints into ducats and Maria Theresa thalers is also to be considered as lost from the monetary supply of civilized countries.

The same is true of the considerable sums of coin which the French government sends year after year to Algeria; they are spent among the natives, and in part never return to trade. The coins sent by France in recent years to Farther India must also have absorbed a great deal of silver, in regard to which, however, we have no precise information.

The wars carried on by the English during the last few years in South Africa, Egypt, and the Soudan, have caused large quantities of sovereigns to go to those countries. Such coins are likely to find their way back to civilized countries only in part and gradually.

If we now reckon together the total quantity of the precious metals which has flown from civilized countries in the five years 1881–'85 to

Asia and Africa, we may conclude that it has amounted annually to more than 30,000 kilograms gold and 1,500,000 kilograms silver. The great uncertainty of any estimate of this kind must, of course, be admitted.

We endeavored to give in the first part of the Materials a statement of the total production of the precious metals in the years from 1851 to 1885. In the preceding paragraphs we have endeavored to give an estimate of their contemporaneous consumption.

We now venture to present a general table, similar to others previously prepared by us, showing the probable monetary supply of gold in civilized countries. We do not, however, venture to present a similar table in regard to silver. If the statements of the production and the consumption of gold and silver are not exact, the same is the case, in a still higher degree, with the present statement. Yet we give it, since it affords a certain check on the approximate correctness of individual estimates, and since, upon the whole, there is a probability of its being accurate. If one or another of our estimates has been very far from the truth, this must appear in such a combination of the results. We present to the reader, who will bear in mind these introductory remarks, and will remember, moreover, what we have said as to the latent reserve of the precious metals, a summary balance sheet of the production and consumption of gold and of the monetary gold supply on hand at different periods since 1851.

Probable changes in the monetary supply of gold in civilized countries in the years 1851 *to* 1885.

Periods.	Production of gold.	Non-monetary consumption.				Used for money and reserves.	Gold supply in money and reserves at the close of the period.	
		Abrasion of coins and loss by accident.	Consumption in the arts, deducting old gold remelted.	Net flow to the East.	Total non-monetary consumption.			
	Kilograms.	*K'g'ms.*	*Kilog'ms.*	*Kilog'ms.*	*Kilog'ms.*	*Kilograms.*	*Kilograms.*	*Marks.*
1850							1,200,000	3,348,000,000
1851-'60	2,006,000	5,000	280,000	100,000	385,000	1,621,000	2,821,000	7,871,000,000
1861-'70	1,900,000	7,000	570,000	300,000	877,000	1,023,000	3,844,000	10,725,000,000
1871-'80	1,732,000	8,000	840,000	110,000	958,000	774,000	4,618,000	12,884,000,000
1881-'85	746,000	4,000	420,000	150,000	574,000	172,000	4,790,000	13,364,000,000

PART IV.

IMPORTS AND EXPORTS OF THE PRECIOUS METALS.

IMPORTS AND EXPORTS OF THE PRECIOUS METALS.

The statistics of most countries give much attention to the imports and exports of the precious metals, coined and uncoined, and generally give detailed statements of their inflow and outflow. This may be ascribed in part to a persistence of the ideas of the mercantile system, by which the net import of the precious metals was supposed to indicate an obvious increase of national wealth. But the statistics are kept, also, because the movement of the precious metals, when combined with other data, is supposed to give important information for many practical questions. The various periodicals which give regular information on trade and finance publish as quickly as possible, at the close of each month, the official statements of the imports and exports of gold and silver in Great Britain, France, the United States, etc., giving them in more or less detail and accompanying them with more or less comment. It is supposed that these statements give significant data, both for the time being and for longer periods, in regard to the general state of trade. Doubts, it is true, have been expressed occasionally by competent persons as to the value of such conclusions; and a thorough reform in the statistics of the international movement of the precious metals has been declared necessary. We will cite a few recent utterances. Mr. J. B. Martin, a London banker, said on the 15th of April, of this year, at a meeting of the well-known institute of bankers, that he had had the curiosity to count the 20-franc pieces which his firm had received during a recent influx of French gold into England. He found that the amount was about 3,300,000 francs; whereas the declared value as given by the Board of Trade was only 600,000 francs. The Board of Trade had stated only one-fifth of the actual import. If many cases of this kind occur, the official statistics of the imports and exports of the precious metals must be considered quite untrustworthy. Professor Carlo F. Ferraris, in a report to the council for statistics at Rome, has shown that the customs statistics of the movement of the precious metals to and from Italy are very incomplete. For instance, the official statement gave 31,010,225 lire as the export of gold and silver in the year 1884, whereas a careful investigation made elsewhere showed the export to be 46,898,962 lire.

The interest generally felt in the regular official statements of the international movement of the precious metals induced us to undertake for this publication an examination of the trustworthiness of these statements, the more so since a sufficient means of checking them was at hand. If in two countries, E. and F., the export and import of the precious metals from the one to the other is given correctly, then, obviously, the export from E. to F. must equal the import from F. to E. If the statistics of both countries agree, we may conclude that their statements are correct, since it is practically impossible that for longer periods arbitrary or incomplete statements should happen to agree. On the other hand, if considerable discrepancies appear, we must conclude that the statistics of one of the countries are incomplete and untrustworthy, or, indeed, that this is the case with both. It need not be said that we are not concerned here with occasional or slight discrepancies.

Let us consider first the trade between Great Britain and France. In the official statistics, both of England and of France, calendar years are used, and with the present means of communication between the two countries, the difference in time between export and import can cause no great discrepancy. We must conclude, therefore, that if the statistical returns are correct on both sides, they should agree substantially. The following tables, which reproduce the official figures for the period from 1871 to 1884, show that a substantial agreement by no means exists, and that this is the case not only with the general trade, but also with the special trade. Converting the figures for both countries into marks, and considering the "general" trade of France (that is, export and import, inclusive of transit trade) we get the following results:

Years.	Gold.				Silver.			
	Imports into England from France.	Exports from France to England.	Exports from England to France.	Imports to France from England.	Imports into England from France.	Exports from France to England.	Imports to France from England.	Exports from England to France.
	Marks.	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
1871-'75	40, 400, 000	44, 800, 000	55, 700, 000	72, 600, 000	23, 700, 000	21, 200, 000	37, 800, 000	47, 000, 000
1876-'80	52, 900, 000	43, 000, 000	64, 900, 000	75, 900, 000	36, 100, 000	36, 400, 000	22, 700, 000	28, 700, 000
1881-'84	36, 000, 000	34, 500, 000	23, 700, 000	30, 700, 000	39, 500, 000	39, 400, 000	9, 400, 000	17, 300, 000

Movement of the precious metals between England and France, 1871-'84.*

a. IMPORTS TO ENGLAND AND EXPORTS FROM FRANCE.

Years.	Gold.		Silver.		Gold and silver.		Average rate of discount of Bank of England.
	Imports to England from France (British statistics).	Exports from France to to England (French statistics).	Imports to England from Franco (British statistics).	Exports from France to England (French statistics).	Imports to England from France (British statistics).	Exports from France to England (French statistics).	
		Francs.		*Francs.*		*Francs.*	*Per cent.*
1871	£3, 708, 203	120, 759, 220	£1, 091, 011	14, 020, 302	£4, 799, 214	134, 779, 522	2. 87
1872	2, 116, 557	63, 360, 020	923, 487	17, 775, 469	3, 040, 044	81, 135, 489	4. 12
1873	1, 508, 985	27, 116, 130	1, 342, 491	3, 807, 490	2, 851, 476	30, 923, 620	4. 75
1874	740, 395	8, 942, 580	1, 172, 272	5, 930, 258	1, 912, 667	14, 872, 828	3. 75
1875	2, 022, 964	29, 892, 790	1, 392, 305	4, 436, 236	3, 415, 269	34, 329, 026	3. 25
1876	1, 427, 024	12, 774, 992	1, 340, 828	14, 571, 260	2, 767, 852	27, 346, 252	2. 62
1877	872, 800	2, 824, 384	1, 521, 300	8, 315, 820	2, 394, 100	11, 140, 204	2. 87
1878	5, 908, 078	61, 302, 688	1, 740, 657	19, 388, 449	7, 648, 735	80, 691, 187	3. 75
1879	2, 905, 323	62, 969, 480	2, 346, 584	31, 746, 735	5, 251, 907	94, 716, 215	2. 37
1880	2, 118, 036	37, 522, 168	2, 068, 635	12, 959, 335	4, 186, 671	50, 481, 503	2. 75
1881	2, 129, 539	35, 564, 800	1, 458, 961	7, 761, 780	3, 588, 500	43, 326, 580	3. 50
1882	1, 832, 361	19, 824, 552	2, 643, 208	21, 080, 888	4, 475, 569	40, 905, 440	4. 12
1883	1, 294, 688	35, 832, 584	2, 069, 628	9, 524, 458	3, 364, 316	45, 357, 042	3. 56
1884	1, 951, 145	23, 564, 480	1, 727, 708	12, 784, 719	3, 678, 853	36, 349, 199	2. 96
Yearly average for—							
1871-'75.....	2, 019, 421	50, 014, 148	1, 184, 313	9, 193, 951	3, 203, 734	59, 208, 099	3. 75
1876-'80.....	2, 640, 252	35, 478, 742	1, 803, 601	17, 396, 320	4, 449, 853	52, 875, 062	2. 87
1881-'84.....	1, 801, 933	28, 696, 604	1, 974, 876	12, 787, 961	3, 776, 809	41, 484, 565	3. 53

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* The figures in these tables (*a* and *b*) refer to the "special" trade (which excludes transit trade) for France. The preceding table gave figures for the "general" trade. There are considerable discrepancies i both tables, but they are more striking in the "special" trade. All subsequent tables for France give the figures of "special" trade.

Movement of the precious metals between England and France, 1871–'84—Continued.

b. EXPORTS FROM ENGLAND AND IMPORTS TO FRANCE.

Years.	Gold.		Silver.		Gold and silver.		Exchange on London in Paris, 3 months' date, per 1 £.
	Exports from England to France (British statistics).	Imports to France from England (French statistics).	Exports from England to France (British statistics).	Imports to France from England (French statistics).	Exports from England to France (British statistics).	Imports to France from England (French statistics).	
		Francs.		*Francs.*		*Francs.*	*Francs.*
1871	£1, 569, 171	31, 925, 200	£1, 239, 904	37, 755, 263	£2, 809, 075	69, 680, 463	25. 85
1872	1, 040, 448	40, 022, 000	871, 177	25, 004, 586	1, 911, 625	65, 026, 586	25. 86
1873	632, 316	15, 431, 100	3, 564, 052	120, 098, 500	4, 196, 368	135, 529, 600	25. 82
1874	5, 433, 712	193, 005, 700	1, 321, 658	38, 895, 800	6, 755, 370	231, 901, 500	25. 81
1875	5, 251, 444	162, 694, 000	2, 449, 730	64, 840, 945	7, 701, 174	227, 534, 945	25. 48
1876	4, 188, 566	109, 406, 040	1, 832, 919	33, 705, 800	6, 021, 485	143, 112, 440	25. 38
1877	6, 147, 504	168, 408, 240	767, 574	14, 973, 400	6, 915, 078	183, 381, 640	25. 31
1878	4, 599, 429	144, 055, 040	2, 190, 877	51, 196, 680	6, 790, 306	195, 251, 720	25. 38
1879	695, 710	17, 181, 528	722, 683	23, 231, 760	1, 418, 393	40, 413, 288	25. 42
1880	602, 218	15, 413, 032	173, 444	6, 063, 295	775, 662	21, 476, 327	25. 47
1881	1, 088, 945	36, 956, 144	704, 089	21, 794, 919	1, 793, 034	58, 751, 063	25. 47
1882	3, 289, 947	77, 219, 120	350, 213	13, 234, 570	3, 640, 160	90, 453, 690	25. 50
1883	101, 234	1, 860, 480	188, 915	8, 454, 985	290, 149	10, 315, 465	25. 55
1884	263, 334	10, 637, 200	633, 146	10, 358, 090	896, 480	20, 995, 290	25. 46
Yearly average for—							
1871–'75	2, 785, 418	88, 615, 600	1, 889, 304	57, 319, 019	4, 674, 722	145, 934, 619	25. 77
1876–'80	3, 246, 685	90, 892, 896	1, 137, 500	25, 834, 187	4, 384, 185	116, 727, 083	25. 39
1881–'84	1, 185, 865	31, 668, 236	469, 091	13, 460, 641	1, 654, 956	45, 128, 877	25. 50

There are many surprising and noteworthy points in these tables. Adding up the statements of the shipments of the precious metals in these tables between England and France, and converting pounds and francs into marks, we get the following results:

	Gold.	Silver.	Gold and silver.
	Marks.	*Marks.*	*Marks.*
Imports to England from France, by British statistics	610, 722, 000	456, 782, 000	1, 067, 504, 000
Exports to England from France, by French statistics	433, 801, 000	147, 283, 000	581, 084, 000
Excess of British over French figures	176, 921, 000	309, 499, 000	486, 420, 000
Imports to France from England, by French statistics	819, 372, 000	375, 687, 000	1, 195, 059, 000
Exports to France from England, by British statistics	698, 080, 000	340, 208, 000	1, 038, 288, 000
Excess of French over British figures	121, 292, 000	35, 479, 000	156, 771, 000

The export of the precious metals from England into France, that is, the imports into France from England, for the fourteen years 1871–'84, are made by the French statistics nearly 157,000,000 marks greater than by the English statistics, a yearly discrepancy of about 20,000,000 marks. On the other hand, the imports into England from France, that is, the exports from France to England, are made by the French statistics to appear less by 486,000,000 marks than by the English statistics, a yearly discrepancy of about 35,000,000 marks.

This great discrepancy, remaining as it does even when a number of years are considered, renders it almost superfluous to point out the discrepancies in individual years. A few examples will suffice: In 1878 the English statistics give the import of gold into England from France at £5,908,078 (118,200,000 marks). But in the French statistics the corresponding export of gold from France to England is said to be 61,302,688 francs (49,000,000 marks). According to the French statistics there were imported into France from England, in 1883, 120,098,500 francs of silver (96,000,000 marks), while the British statistics for the same year stated the export of silver from England to France to be £3,564,052 (71,300,000 marks). Such great differences prove beyond doubt that there are mistakes in the statistical publications of one or both of the two countries. It is immaterial that for some years, as a glance at the tables will show, the figures tally more or less closely. This must be ascribed to accident, in face of the enormous discrepancies in other years. Moreover, there seems to be no general tendency in the variations, from which one could reach any conclusions as to their causes.

Let us turn, now, to a comparison of the movement of the precious metals between England and the United States, following again the official statistics of both countries. Here we encounter two difficulties. In the first place, we find that in the American tables at our disposal, for some years gold and silver are not given separately, but both metals are lumped together. In the next place, the American reports refer not to calendar years, but to fiscal years ending June 30. Comparisons can therefore be readily made only for the averages of several successive years, and even then have only an approximate value.

Movement of the precious metals between England and the United States, 1871–'85.

Years.	Export of gold and silver from England to United States.		Import of gold and silver to United States from England.		Import of gold and silver to England from United States.		Export of gold and silver from United States to England.	
		Marks.		*Marks.*		*Marks.*		*Marks.*
1871	£114,297	2,300,000	$111,996	500,000	£12,181,473	243,000,000	$85,003,713	357,000,000
1872	....	....	553,633	2,300,000	12,861,978	257,200,000	56,189,206	236,000,000
1873	2,418,817	48,400,000	498,570	2,100,000	9,166,295	183,300,000	58,351,025	245,100,000
1874	34,345	700,000	13,552,517	56,900,000	7,985,362	159,700,000	35,794,568	150,300,000
1875	665,939	13,300,000	1,749,883	7,300,000	11,438,891	228,800,000	54,634,540	229,500,000
1876	3,902,727	78,100,000	1,479,683	6,200,000	7,008,939	140,200,000	32,848,274	138,000,000
1877	1,465,520	29,300,000	21,404,002	89,900,000	4,677,839	93,600,000	29,507,937	123,900,000
1878	1,911,570	38,200,000	12,552,008	52,700,000	2,483,512	49,700,000	11,580,656	48,600,000
1879	7,563,398	151,300,000	3,432,954	14,400,000	2,983,979	59,700,000	14,185,207	59,600,000
1880	5,545,407	110,900,000	36,955,634	155,200,000	1,253,932	25,100,000	4,746,007	19,900,000
1881	7,418,096	148,400,000	43,344,891	182,000,000	2,621,524	52,400,000	10,125,395	42,500,000
1882	121,622	2,400,000	13,330,810	56,000,000	8,022,249	160,400,000	36,129,679	151,700,000
1883	986,165	19,700,000	2,008,633	8,400,000	2,813,320	56,300,000	13,967,417	58,700,000
1884	2,192,135	43,800,000	3,124,363	13,100,000	7,701,410	154,000,000	37,884,698	459,100,000
1885	305,343	6,100,000	6,654,076	28,000,000	3,659,552	73,200,000	14,964,804	62,900,000
Yearly average for—								
1871–'75	808,350	16,200,000	3,293,320	13,800,000	10,726,800	214,500,000	57,994,610	243,600,000
1876–'80	4,077,724	81,600,000	15,164,856	63,700,000	3,681,640	73,600,000	18,573,616	78,000,000
1881–'85	2,204,672	44,100,000	13,692,555	57,500,000	4,963,611	99,300,000	22,614,399	95,000,000

In this table, as already remarked, individual years can not be compared with each other, since the American statistics are arranged for fiscal years from July 1 to June 30. Even in comparing the averages of five-year or three-year periods, the effect of this difference must be taken into account.

Taking now the fifteen years from 1871 to 1885 (or 1870–'71 to 1884–'85) we find that the British statistics state the total value of the export of the precious metals from England to the United States to be £34,645,000 (693,000,000 marks). The American statistics, however, state the import of the precious metals from England to the United States to be $160,754,000 (675,000,000 marks). The export of the precious metals from the United States to England, that is to say, the import of the precious metals into England from the United States, is stated in the English statistics to be £96,860,000 (1,937,000,000 marks), and in the

American statistics it is stated to be $495,913,000 (2,083,000,000 marks). This nearly close agreement, both for export and for import, in the two largest trading countries of the world, is certainly strong evidence of the approximate accuracy and practical trustworthiness of the figures.

An agreement of this kind can not be found on comparing the French and American statistics of the movement of the precious metals between France and the United States—a movement which does not begin to attain dimensions as large as those of the trade between the United States and England.

We are unable to give similar comparative statements in regard to the imports and exports of the precious metals to and from Germany, since Hamburg and Bremen are outside the customs lines and have separate statistics.

Movement of the precious metals between England and Hamburg, direct by sea.

Period.	Gold and silver, Hamburg statistics.		Exports from England to Germany, British statistics.		Imports to England from Germany, British statistics.	
	Imports to Hamburg from England.	Exports from Hamburg to England.	Gold.	Silver.	Gold.	Silver.
Average of the years—	*Marks.*	*Marks.*				
1872–'75	131, 539, 975	32, 488, 327	£5, 488, 056	£436, 201	£266, 621	£1, 285, 201
1876–'80	95, 019, 988	108, 658, 000	3, 620, 223	783, 874	496, 106	4, 860, 509
1881	32, 861, 430	12, 398, 000	610, 919	765, 861	442, 866	222, 720
1882	17, 699, 980	12, 477, 000	599, 802	149, 776	53, 035	558, 198
1883	7, 654, 720	7, 883, 000	189, 018	283, 800	157, 496	289, 663
1884	7, 073, 160	10, 083, 000	288, 296	14, 524	71, 519	362, 764
1885	78, 089, 850	13, 176, 000	3, 159, 932	39, 453	217, 696	417, 320

For the whole period from 1872 to 1885 the totals for gold and silver together are, in German money:

	Marks.
Imports to England from Germany (British statistics)	715, 700, 000
Exports from Hamburg to England (Hamburg statistics)	729, 300, 000
Exports from England to Germany (British statistics)	1, 036, 600, 000
Imports to Hamburg from England (Hamburg statistics)	1, 144, 600, 000

Great Britain, the United States, France, and Germany, are of such preponderating importance in international trade that in a compendious publication like the present it is needless to extend this investigation to other countries.

TOTAL EXPORTS AND IMPORTS OF THE PRECIOUS METALS IN DIFFERENT COUNTRIES.

In order to complete those statistics of the international movement of the precious metals, whose trustworthiness we discussed in the preceding paragraphs, we must present general statements of the exports and imports of the precious metals in the leading countries. It is true that even for those countries whose official statistics give fairly correct figures in regard to international trade, the returns indicate only with approximate truth the actual movement of the precious metals. But, on the other hand, the same method is used in these countries year after year, and we get, therefore, a clue as to the general tendency from one year to another of each country's trade in the precious metals. The use of the precious metals in the arts, which was discussed in Part III, necessarily causes the imports of the precious metals to exceed the exports in those countries which do not produce gold or silver. Moreover, a considerable inflow and outflow of the precious metals takes place in all countries through travelers and emigrants, while undeclared remittances take place, not embraced in the official statistics and very difficult to estimate. We now present the tables, so far as material is at hand, for longer periods. For the years previous to 1871 we give averages of several years, lest too much space should be occupied by this part of the compilation.

Imports and exports of precious metals in Great Britain.

Years.	Gold.				Silver.			
	Imports.	Exports.	Excess of imports.	Excess of exports.	Imports.	Exports.	Excess of imports.	Excess of exports.
1858–'60*	£19, 225, 169	£15, 429, 919	£3, 795, 250	....	£10, 622, 011	£11, 520, 897	....	£898, 886
1861–'70*	17, 162, 034	11, 615, 330	5, 546, 704	....	9, 092, 190	9, 023, 367	£68, 823	....
1871	21, 618, 924	20, 698, 275	920, 649	....	16, 521, 903	13, 062, 396	3, 459, 507	....
1872	18, 469, 442	19, 748, 916	....	£1, 279, 474	11, 138, 570	10, 586, 945	551, 625	....
1873	20, 611, 165	19, 071, 220	1, 539, 945	....	12, 988, 066	9, 828, 065	3, 160, 001	....
1874	18, 081, 019	10, 641, 636	7, 439, 383	....	12, 298, 169	12, 211, 957	86, 212	....
1875	23, 140, 834	18, 648, 296	4, 492, 538	....	10, 123, 955	8, 979, 746	1, 144, 209	....
1876	23, 475, 975	16, 515, 748	6, 960, 227	....	13, 578, 269	12, 948, 334	629, 935	....
1877	15, 441, 985	20, 361, 386	....	4, 919, 401	21, 710, 814	19, 436, 733	2, 274, 081	....
1878	20, 871, 410	14, 968, 507	5, 902, 903	....	11, 551, 545	11, 718, 039	....	166, 494
1879	13, 368, 675	17, 578, 818	....	4, 210, 143	10, 786, 863	11, 006, 094	....	219, 231
1880	9, 455, 861	11, 828, 822	....	2, 373, 961	6, 799, 022	7, 060, 681	....	261, 659
1871–'80*	18, 453, 429	17, 006, 162	1, 447, 267	....	12, 749, 718	11, 683, 899	1, 065, 819	....
1881	9, 963, 006	15, 498, 837	....	5, 535, 831	6, 901, 402	7, 003, 982	....	102, 580
1882	14, 376, 559	12, 023, 804	2, 352, 755	....	9, 242, 925	8, 965, 454	277, 471	....
1883	7, 755, 800	7, 091, 365	664, 435	....	9, 468, 002	9, 322, 846	145, 156	....
1884	10, 744, 408	12, 012, 839	....	1, 268, 431	9, 633, 495	9, 986, 363	....	352, 888
1885	13, 376, 561	11, 930, 818	1, 445, 743	....	9, 433, 605	9, 852, 287	....	418, 682

*Average of years.

The total recorded movement of the precious metals in the years 1871–'85 was:

		Marks.
Imports of gold	£240, 750, 624	(4, 815, 000, 000)
Imports of silver	172, 176, 605	(3, 443, 500, 000)
Exports of gold	228, 619, 287	(4, 572, 400, 000)
Exports of silver	161, 969, 942	(3, 239, 400, 000)

The average annual excess of imports of gold was, 1871–'85, £808,756 (16,200,000 marks); of silver, was £680,444 13,600,000 marks. The average annual excess of imports of gold in the period 1858–'70 had been £5,142,523 (102,900,000 marks); of silver, had been £154,495 (3,100,000 marks). The small net import of silver is explained by the considerable domestic production of silver from lead ores and from imported ores.

The importations of gold and silver to England came from the following countries:

Periods.	Gold from—			Silver from—		
	Australasia.	United States.	Other countries.	Mexico, South America (excluding Brazil and West Indies.)	Germany.	Other countries.
1861–'70	£60, 741, 335	£58, 312, 506	£52, 566, 503	£48, 698, 580	£4, 798, 507	£37, 424, 811
1871–'75	35, 688, 312	30, 720, 580	35, 512, 492	16, 398, 265	6, 325, 189	40, 347, 209
1876–'80	24, 989, 712	7, 743, 571	50, 779, 623	15, 915, 603	24, 302, 547	24, 208, 363
1881	4, 470, 186	23, 191	5, 469, 629	1, 965, 615	222, 720	4, 718, 067
1882	2, 996, 549	6, 099, 783	5, 280, 227	3, 308, 682	558, 198	5, 376, 045
1883	2, 256, 128	9, 777	5, 489, 895	3, 787, 881	289, 663	5, 390, 453
1884	709, 388	5, 072, 094	4, 962, 926	4, 397, 298	362, 764	4, 873, 433
1885	3, 737, 424	909, 044	8, 730, 093	3, 688, 544	417, 320	5, 327, 741

In regard to the exports of precious metals from England to British India, see the tables given above (pp. 80, 81, 85).

Imports and exports of the precious metals in France.

Years.	Gold.				Silver.			
	Imports.	Exports.	Excess of imports.	Excess of exports.	Imports.	Exports.	Excess of imports.	Excess of exports.
	Francs.	*Francs.*	*Francs.*	*Francs.*	*Francs.*	*Francs.*	*Francs.*	*Francs.*
1851-'60 *	413, 994, 000	95, 559, 000	318, 435, 000	....	140, 174, 000	279, 139, 000	....	138, 965, 000
1861-'70 *	456, 431, 000	265, 417, 000	191, 014, 000	....	196, 492, 000	166, 027, 000	30, 465, 000	....
1871	143, 862, 000	357, 676, 000	....	213, 814, 000	157, 191, 000	141, 674, 000	15, 517, 000	....
1872	141, 861, 000	194, 754, 000	....	52, 893, 000	240, 874. 000	138, 624, 000	102, 250, 000	....
1873	175, 594, 000	284, 233, 000	....	108, 639, 000	389, 034, 000	207, 536, 000	181, 498, 000	....
1874	517, 045, 000	85, 795, 000	431, 250, 000	....	434, 415, 000	73, 481, 000	360, 934, 000	....
1875	608, 014, 000	137, 693, 000	470, 321, 000	....	266, 782, 000	81, 440, 000	185, 342, 000	....
1876	598, 307, 000	94, 655, 000	503, 652, 000	....	205, 191, 000	64, 775, 000	140, 416, 000	....
1877	534, 697, 000	98, 961, 000	435, 736, 000	....	148, 156, 000	42, 196, 000	105, 960, 000	....
1878	364, 376, 000	127, 972, 000	236, 404, 000	....	179, 044, 000	60, 210, 000	118, 834, 000	....
1879	194, 009, 000	361, 527, 000	....	167, 518, 000	137, 839, 000	62, 176, 000	75, 663, 000	....
1880	194, 846. 000	407, 968, 000	....	213, 122, 000	100, 969, 000	62, 181, 000	38, 788, 000	....
1871-'80*	347, 261, 000	215, 123, 000	132, 138, 000	....	225, 949, 000	93, 429, 000	132, 520, 000	....
1881	233, 470, 000	223, 080, 000	10, 390, 000	....	130, 115, 000	79, 022, 000	51, 093, 000	....
1882	173, 489, 000	202, 673, 000	....	29, 184, 000	128, 047, 000	157, 244, 000	....	29, 197, 000
1883	64, 570, 000	134, 864, 000	....	70, 294, 000	81, 440, 000	95, 944, 000	....	14, 504, 000
1884	127, 451. 000	81, 901, 000	45, 550, 000	....	101, 040, 000	46, 314, 000	54, 726, 000	....

*Average of years.

The total movement of the precious metals in France in 1871-'84 was:

	Francs.	*Marks.*
Imports of gold	4, 071, 591, 000	(3, 257, 300, 000)
Imports of silver	2, 700, 137, 000	(2, 160, 100, 000)
Exports of gold	2, 793, 752, 000	(2, 235, 000, 000)
Exports of silver	1, 312, 817, 000	(1, 050, 300, 000)

The average annual excess of imports of gold in 1871-'84 was therefore 91,274,214 francs (73,000,000 marks); of silver, was 99,094,286 francs (79,300,000 marks); as compared with an average annual excess of imports of gold in 1851-'70, of 254,724,600 francs (203,800,000 marks); and of silver of 54,250,250 francs (43,400,000 marks).

Imports and exports of the precious metals in Italy, 1862-'77 (*according to the customs records*).

Years.	Gold and silver.			
	Imports.	Exports.	Excess of imports.	Excess of exports.
	Lire.	*Lire.*	*Lire.*	*Lire.*
1862	154, 702	1, 046, 970	....	892, 268
1863	309, 595	402, 416	....	192, 268
1864	154, 430	189, 762	....	35, 332
1865	34, 465	743, 440	....	708, 975
1866	1, 364, 170	4, 691, 000	....	3, 326, 830
1867	1, 481, 877	7, 753, 740	....	6, 271, 863
1868	1, 457, 665	1, 473, 710	....	16, 045
1869	1, 512, 700	157, 040	1, 355, 660	....
1870	1, 350, 610	974, 550	376, 060	....
1871	2, 242, 415	10, 870, 041	....	8, 627, 626
1872	4, 101, 706	4, 938, 420	....	836, 714
1873	25, 482, 131	1, 765, 770	23, 716, 361	....
1874	9, 347, 410	7, 269, 926	2, 077, 484	....
1875	8, 389, 584	11, 391, 681	....	3, 002, 097
1876	20, 142, 515	8, 356, 398	11, 786, 117	....
1877	14, 722, 378	19, 221, 108	....	4, 498, 730

Imports and exports of the precious metals in Italy, 1878–'86 (*according to the customs records*).

Years.	Gold.				Silver.			
	Imports.	Exports.	Excess of imports.	Excess of exports.	Imports.	Exports.	Excess of imports.	Excess of exports.
	Lire.	*Lire.*	*Lire.*	*Lire.*	*Lire.*	*Lire.*	*Lire.*	*Lire.*
1878	7, 864, 120	20, 443, 940	....	12, 579, 820	3, 823, 510	26, 258, 870	....	22, 435, 360
1879	9, 455, 160	33, 218, 240	....	23, 763, 080	5, 167, 760	1, 943, 110	3, 224, 650	....
1880	15, 435, 560	15, 871, 500	....	435, 940	24, 035, 945	12, 943, 390	11, 092, 555	....
1881	74, 361, 300	20, 503, 100	53, 858, 200	....	18, 937, 770	7, 472, 310	11, 465, 460	....
1882	63, 959, 900	1, 155, 100	62, 804, 800	....	55, 456, 250	5, 104, 430	50, 351, 820	....
1883	42, 075, 000	8, 373, 700	33, 701, 300	....	52, 008, 025	9, 945, 930	42, 062, 095	....
1884	20, 428, 800	11, 768, 100	8, 660, 700	....	5, 656, 600	19, 242, 125	....	13, 585, 525
1885	11, 698, 700	101, 337, 800	....	89, 639, 100	105, 772, 105	87, 164, 980	18, 607, 125	....
1886 (5 mos.)	4, 037, 100	3, 528, 100	509, 000	....	22, 800, 780	20, 090, 540	2, 710, 240	....

It has already been mentioned that Professor Ferraris has called attention to the errors of the customs statistics on the exports and imports of the precious metals in Italy, and has made an endeavor to secure statistics from other sources which certainly come closer to the facts. These latter are based upon statements of the gold and silver shipments of the railroads and steam-ship companies through whose hands remittances pass.

The result of his investigations for the years 1883, 1884, 1885, and the first five months of 1886, was as follows:

	1883.	1884.		1885.	1886. (First 5 mos.)
	Lire.	*Lire.*		*Lire.*	*Lire.*
Imports of gold	40, 038, 683	19, 606, 846	Imports of gold	13, 936, 016	9, 708, 301
Exports of gold	17, 561, 352	19, 460, 239	Exports of gold	129, 315, 172	8, 268, 511
Excess of imports	22, 477, 331	146, 607	Excess of imports	....	1, 439, 790
Excess of exports	....	....	Excess of exports	115, 379, 156	....
Imports of silver	62, 933, 530	9, 272, 853	Imports of silver	121, 893, 768	16, 467, 698
Exports of silver	8, 772, 204	27, 438, 723	Exports of silver	130, 315, 280	28, 017, 618
Excess of imports	54, 161, 326	....	Excess of imports	....	....
Excess of exports	....	18, 166, 870	Excess of exports	8, 421, 512	11, 549, 920

The customs statistics, on the other hand, indicated for 1883 an excess of gold imports of 33,701,300 lire, and of silver imports of 42,062,095 lire; for 1884 an excess of gold imports of 8,660,700 lire, and an excess of silver exports of 13,585,525 lire; for 1885 an excess of gold exports of 89,639,100 lire, and an excess of silver imports of 18,607,125 lire. For the first five months of 1886 they indicated an excess of gold imports of 509,000 lire, and of silver imports of 2,710,240 lire.

Imports and exports of the precious metals in the United States, 1850–'51—1884–'85.

Average of the fiscal years.	Gold and silver.		
	Imports.	Exports.	Excess of exports.
1851–'55	$5, 151, 817	$39, 432, 522	$34, 280, 705
1856–'60	10, 385, 770	59, 589, 841	49, 204, 071
1861–'63	24, 112, 923	43, 611, 777	19, 498, 854

Imports and exports of the precious metals in the United States, &c.—Continued.

Fiscal years.	Gold.				Silver.		
	Imports.	Exports.	Excess of imports.	Excess of exports.	Imports.	Exports.	Excess of exports.
1871	$6, 883, 561	$66, 686, 208	....	$59, 802, 647	$14, 386, 463	$31, 755, 780	$17, 369, 317
1872	8, 717, 458	49, 548, 760	....	40, 831, 302	5, 026, 231	30, 328, 774	25, 302, 543
1873	8, 682, 447	44, 856, 715	....	36, 174, 268	12, 798, 490	39, 751, 859	26, 953, 369
1874	19, 503, 137	34, 042, 420	....	14, 539, 283	8, 951, 769	32, 587, 985	23, 636, 216
1875	13, 696, 793	66, 980, 977	....	53, 284, 184	7, 203, 924	25, 151, 165	17, 947, 241
1876	7, 992, 709	31, 177, 050	....	23, 184, 341	7, 943, 972	25, 329, 252	17, 385, 280
1877	26, 246, 234	26, 590, 374	....	344, 140	14, 528, 180	29, 571, 863	15, 043, 683
1878	13, 330, 215	9, 204, 455	$4, 125, 760	....	16, 491, 099	24, 535, 670	8, 044, 571
1879	5, 624, 948	4, 587, 614	1, 037, 334	....	14, 671, 052	20, 409, 827	5, 738, 775
1880	80, 758, 396	3, 639, 025	77, 119, 371	....	12, 275, 914	13, 503, 894	1, 227, 980
1882	100, 031, 259	2, 565, 132	97, 466, 127	....	10, 544, 238	16, 841, 715	6, 297, 477
1882	34, 377, 054	32, 587, 880	1, 789, 174	....	8, 095, 336	16, 829, 599	8, 734, 263
1883	17, 734, 149	11, 600, 888	6, 133, 261	....	10. 755, 242	20, 219, 445	9, 464, 203
1884	22, 831, 317	41, 081, 957	....	18, 250, 640	14, 594, 945	26, 051, 326	11, 456, 381
1885	26, 691, 696	8, 477, 892	18, 213, 804	....	16, 550, 627	33, 753, 633	17, 203, 006
Average of.							
1864–'70	11, 117, 584	58, 757, 487	....	47, 639, 903	5, 469, 798	16, 818, 279	11, 348, 481
1871–'75	11, 496, 679	52, 423, 016	....	40, 926, 337	9, 673, 375	31, 915, 112	22, 241, 737
1876–'80	26, 790, 500	15, 039, 703	11, 750, 797	....	13, 182, 043	22, 670, 101	9, 488, 058
1881–'85	40, 333, 095	19, 262, 750	21, 070, 345	....	12, 108, 078	22, 739, 144	10, 631, 066

In the official statistics of the United States separate statements or the export of domestic gold and silver were not made before the year 1864. We have, therefore, taken the two metals together up to that year. The distinction between the export of precious metals of domestic and of foreign production is of no importance for our purposes. It is obviously of no consequence for the monetary conditions of a country whether the gold and silver exported from it has originally been produced there or elsewhere. Moreover, the authorities in the United States themselves doubt whether the distinction, as made in their statistics, rests on a better foundation than uncertain surmise.

Taking then the recorded import and export of the precious metals in the whole period from 1850–'51 to 1884–'85, we find—

Imports of gold and silver to the United States	$834, 057, 000
Exports of gold and silver from the United States	1, 975, 227, 000
Excess of exports	1, 141, 170, 000

The production of silver in the United States did not begin to attain a considerable development till the close of the decade 1860–'70, and up to that time we may assume that the precious metals produced in the United States were almost exclusively gold. Assuming this, we are able to state approximately the exports and imports of gold and silver in the United States for different periods, as follows. Our calculations are made in German gold:

Periods.	Gold.		Silver.		Gold and silver.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
	Marks.	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
1851–'55	58, 600, 000	54, 400, 000	49, 600, 000	773, 700, 000	108, 200, 000	828, 100, 000
1856–'60	100, 100, 000	78, 600, 000	118, 000, 000	1, 172, 800, 000	218, 100, 000	1, 251, 400, 000
1861–'65	333, 500, 000	858, 000, 000	66, 600, 000	418, 300, 000	400, 100, 000	1, 276, 300, 000
1866–'70	252, 600, 000	1, 059, 500, 000	138, 800, 000	435, 700, 000	391, 400, 000	1, 495, 200, 000
1871–'75	241, 400, 000	1, 100, 800, 000	203, 100, 000	670, 200, 000	444, 500, 000	1, 771, 000, 000
1876–'80	562, 600, 000	315, 800, 000	276, 800, 000	476, 100, 000	839, 400, 000	791, 900, 000
1881–'85	847, 000, 000	404, 500, 000	254, 200, 000	477, 500, 000	1, 101, 200, 000	882, 000, 000
Total	2, 359, 800, 000	3, 871, 600, 000	1, 107, 100, 000	4, 424, 300, 000	3, 502, 900, 000	8, 295, 900, 000

Imports and exports of the precious metals in the German Customs Union, 1872–'85.

Years.	Gold.				Silver.			
	Imports.	Exports.	Excess of imports.	Excess of exports.	Imports.	Exports.	Excess of imports.	Excess of exports.
	Marks.	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
1872	35, 280, 000	101, 880, 000	....	66, 600, 000	171, 000, 000	72, 090, 000	98, 910, 000	....
1873	354, 000, 000	52, 935, 000	301, 065, 000	....	147, 300, 000	134, 100, 000	13, 200, 000	....
1874	17, 550, 000	35, 100, 000	....	17, 550, 000	50, 640, 000	71, 766, 000	....	21, 126, 000
1875	15, 400, 000	28, 000, 000	....	12, 600, 000	30, 320, 000	38, 880, 000	....	8, 560, 000
1876	88, 200, 000	22, 400, 000	65, 800, 000	....	23, 040, 000	35, 334, 000	....	12, 294, 000
1877	73, 000, 000	46, 500, 000	26, 500, 000	....	29, 860, 000	19, 656, 000	10, 204, 000	....
1878	168, 600, 000	1, 400, 000	167, 200, 000	....	40, 000, 000	27, 924, 000	12, 076, 000	....
1879	86, 800, 000	5, 600, 000	81, 200, 000	....	32, 750, 000	40, 200, 000	....	7, 450, 000
1880	20, 850, 000	29, 683, 000	....	8, 833, 000	18, 346, 000	21, 084, 000	....	2, 738, 000
1881	14, 078, 000	45, 645, 000	....	31, 567, 000	13, 205, 000	17, 503, 000	....	4, 298, 000
1882	28, 641, 000	39, 226, 000	....	10, 585, 000	6, 518, 000	14, 362, 000	....	7, 844, 000
1883	20, 854, 000	42, 132, 000	....	21, 278, 000	6, 311, 000	20, 662, 000	....	14, 351, 000
1884	18, 424, 000	33, 083, 000	....	14, 659, 000	5, 701, 000	31, 379, 000	....	25, 678, 000
1885	42, 551, 000	24, 528, 000	18, 023, 000	....	2, 987, 000	19, 407, 000	....	16, 420, 000

Figures both for imports and exports are inclusive of precious metals in bars, scraps, and coin.

It is admitted that these figures are incomplete, but we have felt in duty bound to insert them for the sake of completing our statements.

In conclusion, we insert summary tables of the recorded exports and imports of gold and silver, as stated in the official publications of the Netherlands, Belgium, Russia, Austro-Hungary, the Scandinavian countries, and Spain.

Average of the years.	Gold and silver.			
	The Netherlands.		Belgium.	
	Imports.	Exports.	Imports.	Exports.
	Florins.	*Florins.*	*Francs.*	*Francs.*
1851–'55	11, 271, 269	10, 136, 948	*41, 834, 059	*57, 891, 088
1856–'60	17, 149, 000	13, 427, 871	64, 146, 218	188, 693, 803
1861–'65	13, 335, 151	18, 392, 899	37, 410, 242	134, 283, 694
1866–'70	21, 157, 817	13, 004, 681	75, 151, 688	23, 870, 658
1871–'75	25, 247, 515	9, 254, 794	199, 223, 368	18, 077, 993

Average of the years.	The Netherlands.				Belgium.			
	Gold.		Silver.		Gold.		Silver.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
	Florins.	*Florins.*	*Florins*	*Florins.*	*Francs.*	*Francs.*	*Francs.*	*Francs.*
1876–'80	11, 213, 559	2, 258, 168	6, 603, 793	4, 239, 293	8, 313, 212	928, 804	6, 352, 738	780, 036
1881	6, 638, 410	7, 917, 920	2, 429, 977	48, 526	1, 299, 170	62, 000	22, 932, 680	17, 539, 300
1882	9, 985, 120	4, 607, 987	2, 639, 895	66, 530	16, 422, 810	19, 116, 780	30, 556, 200	2, 249, 320
1883	28, 342, 544	767, 773	2, 303, 644	276, 757	2, 470, 510	16, 723, 360	87, 306, 820	18, 221, 520
1884	14, 074, 680	2, 004, 500	1, 757, 983	1, 057, 525	6, 748, 310	20, 920, 320	36, 873, 580	9, 795, 700

* Average for the years 1852–'55,

Years.	Gold and silver.							
	Austro-Hungary.				Russia.			
	Imports.	Exports.	Excess of imports.	Excess of exports.	Imports.	Exports.	Excess of imports.	Excess of exports.
	Florins.	*Florins.*	*Florins.*	*Florins.*	*Silv. rubles.*	*Silv. rubles.*	*Silv. rubles.*	*Silv. rubles.*
1871....	59, 383, 000	55, 488, 000	3, 895, 000	....	7, 421, 000	17, 675, 900	....	10, 254, 000
1872 ...	36, 500, 000	66, 144, 000	....	29,644,000	13, 039, 000	7, 905, 000	5, 134, 000	....
1873....	40, 934, 000	31, 150, 000	9, 784, 000	....	20, 552, 000	14, 664, 000	5, 888, 000	....
1874....	19, 933, 000	18, 942, 000	991, 000	....	16, 630, 000	17, 496, 000	....	866, 000
1875 ...	16, 123, 000	18, 683, 000	....	2,560,000	6, 441, 000	28, 035, 000	....	21, 594, 000
1876....	35, 529, 000	30, 929, 000	4, 600, 000	....	5, 426, 000	103, 254, 000	....	97, 828, 000
1877....	30, 497, 000	15, 550, 000	14, 947, 000	....	10, 950, 000	19, 251, 000	....	8, 301, 000
1878....	52, 697, 000	15, 645, 000	37, 052, 000	....	16, 523, 000	14, 156, 000	2, 367, 000	....
1879 ...	63, 694, 000	9, 469, 000	54, 225, 000	....	14, 770, 000	10, 188, 000	4, 582, 000	....
1880 ...	32, 199, 000	22, 537, 000	9, 662, 000	....	12, 390, 000	28, 778, 000	....	16, 388, 000
1881....	36, 507, 000	5, 915, 000	30, 592, 000	....	9, 946, 000	68, 988, 000	....	59, 042, 000
1882...	22, 545, 000	48, 862, 000	....	26,317,000	9, 774, 000	80, 518, 000	....	70, 744, 000
1883....	21, 741, 000	4, 154; 000	17, 587, 000	....	*6, 554, 000	*19, 938, 000	....	13, 384, 000
1884....	12, 671, 000	9, 891, 000	2, 780, 000	....	*5, 320, 000	*3, 458, 000	1, 862, 000	....

* European Russia only.

Years.	Gold and silver.						
	Scandinavian countries.				Spain.		
	Imports.	Exports.	Excess of imports.	Excess of exports.	Imports.	Exports.	Excess of imports.
	Crowns.	*Crowns.*	*Crowns.*	*Crowns.*	*Pesetas.*	*Pesetas.*	*Pesetas.*
1871*	10, 806, 000	2, 085, 000	8, 721, 000	....	107, 594, 000	8, 543, 000	99, 051, 000
1872*.......	12, 915, 000	113, 000	12, 802, 000	....	106, 416, 000	2, 502, 000	103, 914, 000
1873*.......	26, 173, 000	18, 074, 000	8, 099, 000	....	105, 404, 000	6, 372, 000	99, 032, 000
1874*.......	12, 779, 000	8, 338, 000	4, 441, 000	....	63, 362, 000	6, 452, 000	56, 910, 000
1875........	22, 263, 000	12, 496, 000	9, 767, 000	....	92, 229, 000	4, 316, 000	87, 913, 000
1876	39, 774, 000	40, 883, 000	....	1, 109, 000	12, 011, 000	4, 252, 000	7, 759, 000
1877........	23, 222, 000	16, 425, 400	6, 796, 600	....	49, 520, 000	2, 083, 000	47, 437, 000
1878	26, 054, 000	11, 537, 000	14, 517, 000	....	38, 882, 000	2, 286, 000	36, 596, 000
1879........	34, 358, 000	20, 007, 000	14, 351, 000	....	34, 079, 000	3, 061, 000	31, 018, 000
1880........	26, 879, 000	8, 955, 000	17, 924, 000	....	89, 336, 000	12, 736, 000	76, 600, 000
1881........	15, 063, 000	12, 136, 000	2, 927, 000	....	10, 473, 000	6, 490, 000	3, 983, 000
1882	11, 763, 000	8, 131, 000	3, 632, 000	....	40, 917, 000	7, 103, 000	33, 814, 000
1883	15, 089, 000	6, 851, 000	8, 238, 000	....	....	4, 154, 000	....
1884........	10, 922, 000	4, 027, 000	6, 895, 000	....	35, 171, 246	4, 392, 768	30, 778, 478

* Exclusive of the imports and exports of Denmark, which have not been ascertained for the years 1871–'74.

If we now summarize the total imports and exports of the precious metals in the various countries for recent years, we get in round numbers the following results for the periods 1871–'75 and 1876–'84:

Periods.	Imports of precious metals.	Exports of precious metals.	Excess of imports.
	Marks.	*Marks.*	*Marks.*
1871–'75....................................	9, 103, 200, 000	7, 441, 800, 000	1, 661, 400, 000
1876–'84....................................	12, 137, 100, 000	10, 395, 100, 000	1, 742, 000, 000
Total....................................	21, 240, 300, 000	17, 836, 900, 000	3, 403, 400, 000

PART V.

THE SUPPLY AND QUANTITY IN CIRCULATION OF THE PRECIOUS METALS IN CIVILIZED COUNTRIES.

1. HOLDINGS OF THE PRECIOUS METALS BY THE MORE IMPORTANT BANKS.

In the preceding parts (excepting those which considered the ratio of the precious metals and the coinage at the mints) we have had to do, in the main, with more or less uncertain estimates. In the present part we are able, to a very considerable extent, to give exact figures. This is beyond doubt the case with the statements of the holdings of gold and silver by the great banks and by certain Government treasuries. In former times these holdings were treated as important secrets, whose publication might bring serious damage, not only to the banks themselves, but to the commercial community in general. This fear has gradually disappeared, and publicity is now almost without exception a matter of course.

Before the depreciation of silver in the years after 1870, gold and silver holdings were not separately stated in the returns of the banks, as no practical interest attached to such a distinction. The situation has now changed, and most banks state the proportion of gold and silver in their holdings; and where this is not done regularly, at least no secret is made of it.

It goes without saying that a great interest attaches to the cash holdings, not only of individual banks, but of all institutions which deal in and hold large sums of coin, while similar interest attaches to the changes in the holdings. The supply of coin in the pockets and the tills of the general public of a country undergoes little change, barring unusual contingencies. Considerable changes take place in it only in the course of longer periods of time. On the other hand, important shiftings constantly take place in the coin holdings of the great banks, and these shiftings are important for the policy of the banks themselves, and for the business interest of the community at large. We therefore directed our attention at the very outset of the present publication to the compilation of the varying coin holdings of the banks, especially since 1871. In regard to the Bank of England, the Scotch and Irish banks of issue, the Bank of France, and the national banks of the United States, etc., sufficient informatian was readily obtained from the well-known statistical sources for those countries. In regard to other banks, it would perhaps have been possible to secure the desired information from scattered notices in newspapers or annual reports. Such a proceeding, however, would have involved much labor and time, and yet would hardly have secured the desired result. We have asked, therefore, the officers of the remaining large banks to do us the favor to prepare and forward to us the desired detailed statements, arranged in a specific form. Our request has been most willingly granted, and we are enabled to present the figures of the cash holdings and note circulation of the banks in as complete and exact a form as could possibly be wished. This holds good for the Bank of the Netherlands, the Belgian Bank, the Italian banks of issue, the Swiss banks of issue, the Austro-Hungarian Bank, the Russian Bank, the National Bank of Denmark, the Norwegian Bank, the Imperial Bank and the private banks of Sweden. In regard to the Imperial Bank of Germany, detailed statements are to follow.

Side by side with the figures as to coin holdings we give statements of the contemporary total note circulation of the banks and of the amount of notes not covered by coin. The latter amount has been calculated in the usual manner, and of course can alone be counted as part of the circulation medium, if the coin holdings of the banks are also counted as part of the monetary supply. We mention this, because sometimes both the total note circulation and the coin holdings of banks are counted in reckoning the quantity of money in circulation; a proceeding which causes that quantity to appear larger than in fact it is.

On the other hand, it must be remembered that the designation "notes not covered by coin," is better than "uncovered notes," since the notes are covered not only by cash in the bank, but also by the securities authorized by the various statutes. Yet even the former designation is not quite exact, since the bank's coin is not destined solely to the redemption of notes issued. It is pledged not only to the immediate payment of notes issued, but also to the payment of all obligations that may come due on demand. Deposits especially are to be considered, since the creditors have the right to demand the immediate repayment of these as much as of bank notes. Checks are, in this respect, exactly similar to notes. Since the practice of deposits and the use of checks has come into increasing use in modern times, it is no longer proper to judge of the solvency of a bank of issue solely from the proportion of coin to notes issued; the essential thing is the proportion of coin to the total of obligations payable on demand. The new Swiss law on bank notes has made a sound provision in this respect by enacting that every bank shall keep in coin 40 per cent. of the notes issued, the rest of the coin remaining available for other purposes. The legislation of the Netherlands provides that the banks shall keep at least 40 per cent., not only of the notes issued, but also of all obligations payable on demand.

In the tables we have followed the usual plan of comparing the coin holdings, not with the sum of all obligations payable on demand, but with the excess of notes issued above the coin held; yet we think it necessary to call attention to the importance of the deposit obligations as well.

*Banks of the United Kingdom.**

Years.	Date of bank report.	Bank of England.			Banks of Scotland and Ireland.		Notes of all banks of issue in United Kingdom not covered by coin.
		Coin and bullion.	Notes.		Coin and bullion.	Notes.	
			Total.	Not covered by coin.*			
1851....	End of December..	£17,319,454	£19,767,164	£2,447,620	£2,091,734	£8,083,741	£14,620,830
1856....	....do..............	10,230,311	19,427,714	9,197,403	4,451,872	11,656,686	23,523,801
1861....	....do..............	15,961,439	20,818,190	4,856,751	5,094,908	11,054,074	17,050,807
1866....	....do..............	19,415,362	23,745,288	4,329,926	5,144,682	10,773,962	15,364,159
1871....	End of June.......	26,609,540	24,556,228	....	6,353,987	12,704,659	9,242,352
	End of December..	24,914,822	25,009,023	94,201	7,187,649	13,292,534	11,438,447
1872....	End of June.......	24,065,094	26,447,155	2,382,061	6,700,161	13,261,891	13,022,553
	End of December..	24,014,298	25,561,205	1,546,907	7,086,326	13,252,201	12,287,268
1873....	End of June.......	22,336,814	26,060,885	3,724,071	6,851,398	12,990,288	14,680,937
	End of December..	22,618,685	25,807,070	3,188,385	7,153,414	13,042,069	13,765,737
1874....	End of June.......	23,929,601	27,089,915	8,160,314	7,102,401	12,946,343	13,235,661
	End of December..	21,492,793	26,141,530	4,648,737	7,603,794	13,362,766	15,240,067
1875...	End of June.......	26,699,116	27,936,215	1,237,099	7,271,252	13,340,490	11,532,922
	End of December.	21,703,879	27,525,155	5,821,276	8,108,162	14,244,931	16,760,853
1876 ...	End of June.......	29,959,412	27,661,255	....	7,405,700	13,199,132	9,485,100
	End of December..	28,214,165	28,622,775	408,610	8,340,476	14,436,198	10,310,679
1877....	End of June.......	26,826,398	27,904,045	1,167,647	7,308,739	13,240,656	13,006,430
	End of December..	24,386,794	27,333,880	2,947,086	7,956,252	13,695,588	12.990,116
1878....	End of June.......	22,603,217	28,521,525	5,918,308	7,062,431	12,599,040	16,161,905
	End of December..	28,088,361	32,782,010	4,693,649	7,867,810	13,290,666	12,073,274
1879....	End of June.......	35,286,269	29,536,865	....	6,887,900	11,381,271	3,363,498
	End of December..	27,601,562	27,634,235	....	7,068,938	12,112,479	8,487,472
1880....	End of June.......	29,319,390	27,307,380	....	6,333,068	11,096,811	7,371,927
	End of December..	24,238,616	26,320,540	2,081,924	7,394,978	13,065,322	11,183,230
1881....	End of June.......	27,234,919	26,954,040	....	6,473,932	11,797,674	9,345,350
	End of December..	20,316,994	25,510,870	5,193,876	7,418,513	13,549,549	14,895,232
1882....	End of June.......	24,380,941	26,070,945	1,690,004	6,920,022	12,681,663	11,892,182
	End of December..	20,395,245	25,693,195	5,297,950	8,384,425	14,700,088	15,144,568
1883....	End of June.......	22,438,753	25,473,995	3,035,242	7,268,498	12,739,499	13,357,089
	End of December .	21,566,273	24,990,535	3,424,262	8,084,557	13,771,181	12,587,043
1884....	End of June.......	25,075,683	25,315,320	239,637	7,143,669	12,222,719	8,577,519
	End of December..	20,695,496	25,037,210	4,341,714	7,683,434	13,147,337	12,711,678
1885....	End of June.......	27,481,488	25,798,185	....	6,510,622	11,566,374	6,308,852
	End of December..	20,115,228	24,513,110	4,397,882	8,125,962	12,856,797	11,977,754
1886....	End of June.......	21,319,430	25,241,110	3,921,680	7,351,791	12,333,400	11,722,158

* In this table, and in those following, "not covered by coin" will be understood to mean "not covered by coin and bullion."

Banks of Australasia.

Years.	Coin and bullion.	Notes in circulation.	Years.	Coin and bullion.	Notes in circulation.
1874............	£8,275,720	£4,116,334	1880	£12,183,652	£4,383,128
1875............	8,629,678	4,257,058	1881	11,247,502	4,907,514
1876............	9,605,336	4,228,854	1882	10,788,060	5,346,633
1877............	8,738,651	4,338,694	1883	10,554,768	5,466,862
1878............	8,365,272	4,383,071	1884	14,183,400	5,409,891
1879............	10,306,760	4,087,485	1885	13,177,985	5,623,205

Bank of France.

Years.	Date of bank report.	Coin and bullion.			Notes.	
		Gold.	Silver.	Total.	Total.	Not covered by coin.
		Francs.	*Francs.*	*Francs.*	*Francs.*	*Francs.*
1850....	End of December....	39, 000, 000	480, 900, 000	469, 900, 000	496, 175, 200	26, 275, 200
1851....	....do	87, 400, 000	480, 300, 000	567, 700, 000	583, 043, 900	15, 343, 900
1856....	....do	74, 600, 000	105, 000, 000	179, 600, 000	585, 344, 400	405, 744, 400
1861....	....do	229, 000, 000	92, 700, 000	221, 700, 000	723, 062, 400	501, 362, 400
1866....	....do	559, 600, 000	137, 100, 000	696, 700, 000	936, 969, 800	240, 269, 800
1870....	....do	428, 700, 000	68, 500, 000	497, 200, 000	1, 718, 478, 600	1, 221, 278, 600
1871....	....do	553, 400, 000	81, 200, 000	634, 600, 000	2, 307, 000, 000	1, 672, 400, 000
1872....	End of June..........	....	....	739, 875, 000	2, 277, 175, 000	1, 537, 300, 000
	End of December....	658, 700, 000	132, 600, 000	791, 300, 000	2, 787, 800, 000	1, 996, 500, 000
1873....	End of June..........	....	....	776, 297, 816	2, 885, 078, 508	2, 108, 780, 692
	End of December....	611, 300, 000	156, 300, 000	767, 600, 000	2, 886, 300, 000	2, 118, 700, 000
1874....	End of June..........	....	....	1, 195, 458, 839	2, 522, 518, 365	1, 327, 059, 526
	End of December....	1, 012, 100, 000	313, 200, 000	1, 325, 300, 000	2, 644, 838, 970	1, 319, 538, 970
1875....	End of June..........	....	....	1, 567, 464, 959	2, 423, 348, 910	855, 883, 951
	End of December....	1, 174, 300, 000	505, 000, 000	1, 679, 300, 000	2, 438, 044, 785	758, 744, 785
1876....	End of June..........	....	....	2, 061, 732, 547	2, 430, 783, 505	369, 050, 958
	End of December....	1, 530, 400, 000	638, 600, 000	2, 169, 000, 000	2, 562, 767, 935	393, 767, 935
1877....	End of June..........	....	....	2, 274, 545, 679	2, 429, 191, 400	154, 645, 721
	End of December....	1, 177, 100, 000	865. 400, 000	2, 042, 500, 000	2, 545, 756, 935	503, 256, 935
1878....	End of June..........	....	....	2, 147, 100, 785	2, 284, 881, 740	137, 780, 955
	End of December....	983, 600, 000	1, 058, 100, 000	2, 041, 700, 000	2, 298, 778, 385	257, 078, 385
1879....	End of June..........	....	....	2, 252, 003, 654	2, 229, 208, 995	....
	End of December....	741, 600, 000	1, 227, 600, 000	1, 969, 200, 000	2, 343, 000, 000	373, 800, 000
1880....	End of June..........	798, 387, 897	1, 248, 208, 875	2, 046, 596, 772	2, 326, 013, 140	279, 416, 368
	End of December....	564, 268, 849	1, 222, 604, 414	1, 786, 873, 263	2, 476, 727, 415	689, 854, 152
1881....	End of June..........	648, 613, 887	1, 242, 371, 688	1, 890, 985, 575	2, 596, 818, 885	705, 833, 310
	End of December....	655, 696, 391	1, 161, 468, 130	1, 817, 164, 521	2, 778, 428, 840	961, 264, 319
1882....	End of June..........	975, 427, 225	1, 160, 016, 297	2, 135, 443, 522	2, 672, 711, 460	537, 267, 938
	End of December....	964, 481, 335	1, 091, 275, 662	2, 055, 756, 997	2, 790, 357, 475	734, 600, 478
1883....	End of June..........	1, 005, 182, 862	1, 049, 905, 643	2, 055, 088, 505	2, 900, 753, 535	845, 665, 030
	End of December....	950, 553, 401	995, 969, 899	1, 946, 523, 300	3, 101, 765, 710	1, 155, 242, 410
1884....	End of June..........	1, 047, 803, 949	1, 017, 058, 727	2, 064, 862, 676	2, 947, 512, 255	882, 649, 579
	End of December....	1, 001, 418, 960	1, 028, 389, 476	2, 029, 808, 436	2, 977, 591, 695	947, 783, 259
1885....	End of June..........	1, 150, 809, 185	1, 083, 725, 915	2, 234, 535, 100	2, 783, 044, 135	528, 591, 025
	End of December....	1, 157. 415. 160	1, 085, 432, 782	2, 242, 847, 942	2, 918, 050, 745	675, 202, 803
1886....	End of June..........	1, 377, 367, 074	1, 126, 695, 112	2, 504, 062, 186	2, 828, 308, 470	324, 246, 284

Swiss banks of issue.

Years.	Date of bank report (statements are weekly).	Coin and bullion.			Notes.	
		Gold.	Silver.	Total.	Total.	Not covered by coin.
		Francs.	*Francs.*	*Francs.*	*Francs.*	*Francs.*
1876....	End of December....	....	....	37, 890, 000	78, 565, 000	40, 675, 000
1877....	....do	....	....	33, 315, 000	76, 101, 000	42, 786, 000
1878....	....do	....	....	34, 094, 000	80, 613, 000	46, 519, 000
1879....	....do	....	....	41, 767, 000	86, 070, 000	44, 303, 000
1880....	....do	....	....	45, 497, 000	93, 774, 000	48, 277, 000
1881....	....do	....	....	38, 929, 000	98, 500, 000	59, 571, 000
1882....	....do	33, 197, 000	21, 394, 000	54, 591, 000	96, 934, 000	42, 343, 000
1883....	End of June..........	34, 542, 000	20, 983, 000	55, 525, 000	91, 178, 000	35, 653, 000
	End of December....	39, 401, 000	24, 021, 000	63, 422, 000	113, 388, 000	49, 966, 000
1884....	End of June..........	43, 059, 000	17, 779, 000	60, 838, 000	106, 609, 000	45, 771, 000
	End of December ...	46, 883, 000	25, 846, 000	72, 729, 000	121, 272, 000	48, 543, 000
1885....	End of June..........	47, 140, 000	18, 654, 000	65, 794, 000	113, 305, 000	47, 511, 000
	End of December....	49, 163, 000	20, 438, 000	69, 501, 000	124, 111, 000	54, 610, 000
1886....	End of June..........	49, 884, 000	17, 398, 000	67, 282, 000	113, 257, 000	45, 975, 000

Italian Banks of Issue.

Years.	Date of bank report.	Coin and bullion.			Notes.		Government paper money.
		Gold.	Silver.	Total.	Total.	Not covered by coin.	
		Lire.	*Lire.*	*Lire.*	*Lire.*	*Lire.*	*Lire.*
1861	End of December	49, 672, 321		49, 672, 321	107, 678, 670	58, 006, 349	....
1865	....do	127, 998, 925		127, 998, 925	170, 396, 250	42, 397, 325	....
1870	....do	77, 234, 797	168, 474, 219	245, 709, 016	442, 435, 438	196, 726, 422	....
1871	....do	93, 339, 258	127, 960, 835	221, 300, 093	577, 573, 623	356, 273, 530	....
1872	....do	91, 879, 250	112, 554, 645	204, 433, 895	623, 382, 254	418, 948, 359	....
1873	....do	91, 465, 728	117, 837, 362	209, 303, 090	664, 329, 910	455, 026, 820	....
1874	....do	90, 971, 133	110, 985, 718	201, 956, 851	632, 229, 800	431, 272, 949	....
1875	....do	67, 256, 762	76, 025, 228	143, 281, 990	621, 237, 832	477, 955, 842	....
1876	End of June	70, 073, 057	75, 419, 256	145, 492, 313	589, 904, 495	444, 412, 182	....
	End of December	75, 494, 492	73, 478, 072	148, 972, 564	646, 029, 437	497, 056, 873	....
1877	End of June	76, 277, 008	72, 514, 639	148, 791, 647	664, 193, 759	515, 402, 112	....
	End of December	76, 805, 285	72, 527, 127	149, 332, 412	628, 560, 592	479, 228, 180	....
1878	End of June	77, 440, 013	71, 717, 212	149, 157, 225	629, 020, 664	479, 863, 439	....
	End of December	79, 364, 617	71, 595, 117	150, 959, 734	672, 283, 318	521, 323, 584	....
1879	End of June	80, 424, 783	69, 157, 259	149, 582, 042	698, 184, 164	548, 602, 122	....
	End of December	80, 427, 468	67, 388, 642	147, 816, 110	732, 443, 334	584, 627, 224	....
1880	End of June	71, 924, 335	66, 600, 965	138, 525, 300	719, 475, 535	580, 950, 235	....
	End of December	77, 616, 701	97, 371, 989	174, 988, 690	748, 968, 280	573, 979, 590	....
1881	End of June	74, 200, 218	65, 514, 347	139, 714, 565	730, 458, 719	590, 744, 154	....
	End of December	71, 304, 720	63, 573, 306	134, 878, 026	735, 579, 197	600, 701, 171	....
1882	End of June	76, 986, 905	62, 685, 617	139, 672, 522	732, 767, 109	593, 094, 587	....
	End of December	77, 198, 478	80, 762, 920	157, 961, 398	732, 373, 667	574, 412, 269	....
1883	End of June	156, 503, 575	103, 069, 572	259, 573, 147	764, 026, 019	504, 452, 872	3, 772, 985
	End of December	220, 248, 999	99, 303, 063	319, 552, 062	793, 915, 066	474, 363, 004	89, 885, 650
1884	End of June	259, 846, 199	96, 149, 625	355, 995, 824	841, 858, 170	485, 862, 346	218, 165, 213
	End of December	305, 694, 349	64, 893, 886	370, 588, 235	899, 096, 974	528, 508, 739	272, 179, 950
1885	End of June	288, 821, 967	51, 102, 632	339, 924, 599	920, 835, 593	580, 910, 994	289, 948, 330
	End of December	280, 606, 270	56, 015, 463	336, 621, 733	948, 451, 677	611, 829, 944	297, 122, 660
1886	End of June	300, 118, 270	64, 934, 320	365, 052, 590	996, 892, 282	631, 839, 692	305, 094, 720

In Italy the reserve for notes in circulation includes not only the precious metals held by the banks, but also copper coins up to $\frac{1}{1000}$ of the total to be covered, and the old note issues and government paper money, both of these latter being now redeemable at the public treasury in gold or silver. Taking these into consideration, we find that the uncovered note circulation of the Italian banks of issue was as follows, at the end of the years:

Years.	Circulation.	Years.	Circulation.	Years.	Circulation.
	Lire.		*Lire.*		*Lire.*
1861	58, 006, 349	1878	356, 351, 912	1882	428, 870, 437
1865	42, 397, 325	1879	409, 482, 973	1883	344, 385, 458
1871	270, 107, 510	1880	413, 128, 425	1884	404, 751, 938
1876	345, 831, 585	1881	438, 848, 645	1885	514, 756, 778
1877	353, 298, 625				

By an act of April 7, 1881, and by regulations for the execution of that act, of date June 16, 1881, and March 1, 1883, the Government was empowered to issue 340,000,000 lire of Government paper money—240,000,000 lire in 10-lire pieces and 100,000,000 lire in 5-lire pieces. The issue began in April, 1883. The coin holdings of the Government treasury amounted, on December 31, 1883, to 467,069,283 lire in decimal coins and 8,197,623 lire in other coins, chiefly old Bourbon piasters; on December 31, 1884, to 355,606,321 and 26,821,589 lire, respectively; on December 31, 1885, to 222,000,000 lire and 77,000,000 lire, respectively.

National Bank of Belgium.

Years.	Date of bank report.	Coin and bullion.			Notes.	
		Gold.	Silver.	Total.	Total.	Not covered by coin.
		Francs.	*Francs.*	*Francs.*	*Francs.*	*Francs.*
1860	End of December	1,421,500	61,602,500	63,024,000	117,900,000	54,876,000
1861	do	....	....	69,048,500	117,848,000	48,799,500
1865	do	....	....	55,074,000	125,106,000	70,032,000
1870	do	24,463,000	71,152,000	95,615,000	202,528,000	106,913,000
1871	do	38,985,000	84,286,000	123,271,000	228,690,000	105,419,000
1872	do	37,879,000	77,791,000	115,670,000	297,672,000	182,002,000
1873	End of June	....	....	139,844,000	351,975,000	212,131,000
	End of December	37,806,000	67,687,000	105,493,000	320,586,000	215,093,000
1874	End of June	41,160,000	60,978,000	102,138,000	300,298,000	198,160,000
	End of December	58,444,000	59,803,000	118,247,000	328,874,000	210,627,000
1875	End of June	66,685,000	56,038,000	122,723,000	322,153,000	199,430,000
	End of December	77,905,000	44,757,000	122,622,000	340,254,000	217,592,000
1876	End of June	77,330,000	58,507,000	135,837,000	330,674,000	194,837,000
	End of December	79,040,000	37,635,000	116,675,000	364,560,000	247,885,000
1877	End of June	69,070,000	35,980,000	105,050,000	345,535,000	240,485,000
	End of December	61,200,000	38,050,000	99,250,000	342,108,000	242,858,000
1878	End of June	60,580,000	29,970,000	90,550,000	325,120,000	234,570,000
	End of December	61,330,000	37,840,000	99,170,000	313,620,000	214,450,000
1879	End of June	62,880,000	40,500,000	103,380,000	309,950,000	206,570,000
	End of December	71,635,000	33,780,000	105,415,000	334,975,000	229,560,000
1880	End of June	61,655,000	32,745,000	94,400,000	311,070,000	216,670,000
	End of December	73,063,000	25,727,000	98,790,000	339,970,000	241,180,000
1881	End of June	77,510,000	26,315,000	103,825,000	331,375,000	227,550,000
	End of December	77,340,000	22,135,000	99,475,000	354,755,000	255,280,000
1882	End of June	62,445,000	31,815,000	94,260,000	334,185,000	239,925,000
	End of December	71,885,000	27,560,000	99,445,000	355,700,000	256,255,000
1883	End of June	69,320,000	22,600,000	91,920,000	336,720,000	244,800,000
	End of December	71,885,000	26,215,000	98,100,000	357,610,000	259,510,000
1884	End of June	64,895,000	30,465,000	95,360,000	340,300,000	244,940,000
	End of December	65,925,000	30,610,000	96,535,000	357,760,000	261,225,000
1885	End of June	60,010,000	36,410,000	96,420,000	346,490,000	250,070,000
	End of December	69,500,000	32,700,000	102,200,000	367,000,000	264,800,000
1886	End of June	64,700,000	40,000,000	104,700,000	357,000,000	253,300,000

Bank of the Netherlands.

		Florins.	*Florins.*	*Florins.*	*Florins.*	*Florins.*
1850	End of December	....	79,393,235	79,393,235	52,096,915	....
1851	End of June	....	92,477,888	92,477,888	51,970,990	....
	End of December	....	99,548,945	99,548,945	60,491,445	....
1856	End of June	....	74,278,687	74,278,687	91,478,045	17,199,358
	End of December	....	68,249,588	68,249,588	79,602,145	11,352,557
1861	End of June	....	99,864,266	99,864,266	100,574,100	709,834
	End of December	....	87,403,449	87,403,449	102,359,620	14,956,171
1865	End of June	....	95,439,653	95,439,653	114,869,095	19,429,412
	End of December	....	76,908,531	76,908,931	105,950,330	29,041,799
1870	End of June	....	95,144,360	95,144,360	130,634,890	35,490,530
	End of December	....	109,957,309	109,957,309	144,106,040	34,148,731
1871	End of June	....	118,138,726	118,138,726	146,837,490	28,198,764
	End of December	5,522,513	138,301,458	143,823,971	157,141,810	13,317,839
1872	End of June	27,969,273	125,946,177	153,915,450	164,622,415	10,706,965
	End of December	27,969,273	92,863,525	120,832,798	158,802,630	37,969,832
1873	End of June	27,833,079	78,078,371	105,911,450	159,722,950	53,811,500
	End of December	39,972,292	68,521,280	108,493,572	167,951,995	59,458,423
1874	End of June	56,297,559	76,958,547	133,256,106	169,562,980	36,306,874
	End of December	55,297,886	82,216,088	137,513,974	175,197,000	37,683,026
1875	End of June	61,180,968	80,180,888	141,361,856	180,698,590	39,336,734
	End of December	69,250,690	89,517,731	158,768,421	186,102,595	27,334,174
1876	End of June	64,457,302	97,527,588	161,984,890	181,235,960	19,251,070
	End of December	64,257,952	89,261,289	153,519,241	190,233,430	36,714,189
1877	End of June	74,792,866	76,841,035	151,633,901	195,363,235	43,729,334
	End of December	50,509,237	76,867,697	127,376,934	200,119,425	72,742,491
1878	End of June	44,298,531	70,639,252	114,937,783	193,547,350	78,609,567
	End of December	44,634,172	77,217,843	121,852,015	186,098,880	64,246,865
1879	End of June	68,887,689	77,260,300	146,147,989	187,325,580	41,177,591
	End of December	73,425,259	80,901,513	154,326,772	189,668,690	35,341,918
1880	End of June	80,378,866	81,350,905	161,729,771	188,261,950	26,532,179
	End of December	56,861,791	84,844,426	141,706,217	198,549,505	56,843,288
1881	End of June	50,440,142	89,646,566	140,086,708	200,983,440	60,896,732
	End of December	18,158,479	89,035,713	107,194,192	195,941,100	88,746,908
1882	End of June	21,868,007	92,043,530	113,911,587	183,431,525	69,519,988
	End of December	5,272,728	92,347,767	97,620,495	189,139,295	91,518,800
1883	End of June	45,948,971	95,105,212	141,054,183	185,071,630	44,017,447
	End of December	23,506,960	93,368,465	116,879,425	187,719,110	70,848,685
1884	End of June	43,437,446	94,887,583	138,325,029	190,549,250	52,224,221
	End of December	27,146,841	93,373,017	120,519,858	193,508,095	72,988,237
1885	End of June	41,530,577	95,293,552	136,824,129	184,776,875	47,952,746
	End of December	47,904,000	95,916,000	143,820,000	192,432,000	48,612,000
1886	End of June	77,004,000	98,472,000	175,476,000	198,396,000	22,920,000

Bank of Austro-Hungary (formerly the Privileged National Bank of Austria).

Years.	Date of bank report.	Coin and bullion.			Notes.		Government notes.
		Gold.	Silver.	Total.	Total.	Not covered by coin.	
		Florins.	*Florins.*	*Florins.*	*Florins.*	*Florins.*	*Florins.*
1850	End of December	5, 741	33, 912, 540	33, 918, 281	268, 135, 582	234, 217, 301	....
1851	End of June	5, 741	44, 938, 821	44, 944, 562	252, 751, 059	207, 806, 497	....
	End of December.	5, 741	44, 963, 298	44, 969, 039	226, 418, 345	181, 449, 306	....
1856	End of June	786, 383	63, 365, 406	64, 151, 789	386, 633, 979	322, 482, 190	....
	End of December	3, 025. 984	88, 576, 656	91, 602, 640	399, 190, 139	307, 587, 499	....
1861	End of June	2, 243, 129	87, 535, 122	89, 778, 251	473, 144, 397	383, 366, 146	....
	End of December	2, 148, 346	97, 000, 035	99, 148, 381	468, 874, 423	369, 726, 042	....
1865	End of June	1, 507, 209	115, 197, 124	116, 704, 333	342, 412, 662	225, 708, 329	....
	End of December	1, 507, 105	120, 014, 664	121, 521, 769	351, 100, 755	229, 578, 986	....
1870	End of June	234. 923	112, 347, 930	112, 582, 873	278, 494 560	165, 911, 687	315, 037, 082
	End of December	1, 424, 922	112, 902, 253	114, 327, 175	296, 893, 160	182, 565, 985	352, 113, 519
1871	End of June	5, 379, 122	115, 351, 582	120, 730, 707	282, 063, 760	161, 333, 056	359, 535, 749
	End of December	44, 403, 430	99, 093, 014	143, 496, 444	317, 333. 530	173, 837, 086	373, 600, 894
1872	End of June	48, 308, 711	71, 532, 316	119, 841, 027	294, 503, 180	174, 662, 153	376, 860, 514
	End of December.	69, 403, 958	73, 529, 370	142, 933, 328	318, 365, 470	175, 432, 142	375, 991, 886
1873	End of June	79, 085, 400	65, 324, 943	144, 410, 352	338, 572, 450	194, 162, 098	376, 882, 873
	End of December	70, 527, 742	73, 308, 949	143, 836. 691	358, 942, 580	215, 105, 889	344, 033, 270
1874	End of June	73, 246, 582	69, 169, 939	142, 416, 521	302, 142, 430	159, 725, 909	320, 730, 163
	End of December	72, 741, 309	66, 627, 580	139, 368, 889	293, 762, 350	154, 393, 461	345, 282, 194
1875	End of June	68, 037, 247	69, 961, 508	137, 998, 755	291, 471, 060	153, 472, 305	336, 206, 966
	End of December	67, 854, 046	66, 562, 848	134, 416, 894	286, 242, 330	151, 825, 436	346, 501, 033
1876	End of June	66, 938, 712	69. 659, 323	136, 598, 035	274, 706, 550	138, 108, 515	332, 055, 819
	End of December	70, 222, 013	66, 385, 770	136, 607, 783	295, 910, 060	159, 302, 277	355, 444, 167
1877	End of June	66, 792, 753	69. 823, 758	136, 616, 511	269, 565, 440	132, 948, 929	344, 948, 998
	End of December	67, 376, 205	70, 077, 483	137, 453, 688	282, 267, 900	144, 814, 212	345, 961, 161
1878	End of June	67, 374, 595	70, 077, 483	137, 452, 078	266, 834, 010	129, 381, 932	338, 288, 177
	End of December	67, 374, 595	86, 485, 777	153, 860, 372	288, 799, 000	134, 938, 628	364, 002, 389
1879	End of June	59, 801, 083	91, 833, 640	151, 634, 723	288, 423, 260	136, 788, 537	321, 012, 022
	End of December	58, 631, 872	105, 613, 790	164, 245, 662	316, 759, 400	152, 513, 738	313, 030, 526
1880	End of June	58, 634, 739	108, 243, 950	166, 878, 689	306, 082, 150	139, 203, 461	312, 429, 861
	End of December	65, 010, 262	108, 291, 351	173, 301, 613	328, 622, 890	155, 321, 277	327, 737, 769
1881	End of June	55, 487, 010	115, 893, 653	171, 380, 663	310, 006, 220	138, 625, 557	321, 133, 339
	End of December.	68, 725, 533	122, 130, 826	190, 856, 359	354, 207, 560	163, 351, 201	320, 434, 947
1882	End of June	64, 896, 332	109, 636, 513	174, 532, 845	343, 267, 090	168, 734, 245	313, 187, 800
	End of December	79, 172, 407	114. 567. 302	193, 739, 709	368, 633, 710	174, 894, 001	351, 493, 795
1883	End of June	68, 440, 314	119, 856, 975	188, 297, 289	360, 822, 150	172, 524, 861	333, 146, 609
	End of December	77, 682, 053	121, 696, 815	199, 378, 868	380, 457, 420	181, 078, 552	350, 951, 770
1884	End of June.	64, 208, 220	125, 062, 547	189, 270, 767	365, 548, 360	176, 277, 593	325, 413, 700
	End of December.	78, 822, 133	126, 568, 175	205, 390. 308	375, 725, 030	170, 334, 722	354, 248, 072
1885	End of June	69, 272, 579	126, 471, 815	195, 744, 394	343, 924, 150	148, 179, 756	313, 794, 984
	End of December	69, 722, 718	129, 723, 317	198, 796, 035	363, 603, 020	164, 806, 985	338, 248, 952
1886	End of June	63, 820, 000	134, 610, 000	198, 430, 000	353, 430, 000	155, 000, 000	....

Imperial Bank and other banks of issue in Germany.

Years.	Date of bank report.	Imperial (or Prussian) Bank.			Banks of issue, including Imperial Bank.		
		Coin and bullion.	Notes.		Coin and bullion.	Notes.	
			Total.	Not covered.		Total.	Not covered.
		Marks.	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
1851....	End of December..	63, 248, 000	61, 052, 000	....	....	....	....
1856....	....do............	67, 504, 000	141, 405, 000	73, 901, 000	....	....	....
1861....	....do............	266, 697, 000	308, 730, 000	42, 033, 000	....	....	....
1866....	....do............	209, 274, 000	376, 275, 000	167, 001, 000	....	....	....
1871....	....do............	574, 309, 000	726, 726, 000	152, 417, 000	....	1, 066, 599, 000	....
1872....	....do............	553, 239, 000	934, 593, 000	381, 354, 000	....	1, 368, 800, 000	....
1873....	....do............	703, 209, 000	898, 719, 000	195, 510, 000	....	1, 360, 991, 000	....
1874....	....do............	610, 533, 000	838, 422, 000	227, 889, 000	....	1, 259, 940, 000	....
1875....	....do............	438, 043, 000	735, 723, 000	297, 680, 000	609, 909, 000	1, 050, 457, 000	440, 548, 000
1876....	....do............	500, 592, 000	766, 107, 000	265, 515, 000	610, 910, 000	989, 170, 000	378, 260, 000
1877....	End of June	547, 931, 000	755, 279, 000	207, 348, 000	644, 226, 000	952, 454, 000	308, 228, 000
	End of December..	452, 173, 000	715, 830, 000	263, 657, 000	542, 247, 000	918, 102, 000	375, 855, 000
1878....	End ot June	509, 968, 000	672, 898, 000	162, 930, 000	595, 557, 000	863, 012, 000	267, 455, 000
	End of December..	472, 111, 000	663, 737, 000	191, 626, 000	560, 211, 000	857, 761, 000	297, 550, 000
1879....	End of June	546, 083, 000	745, 095, 000	199, 012, 000	634, 564, 000	932, 466, 000	297, 902, 000
	End of December..	539, 373, 000	792, 808, 000	253, 435, 000	626, 399, 000	990, 083, 000	363, 684, 000
1880....	End of June	582, 114, 000	814, 303, 000	232, 189, 000	665, 411, 000	1, 012, 027, 000	346, 616, 000
	End of December..	522, 417, 000	806, 118, 000	283, 701, 000	614, 939, 000	1, 007, 650, 000	392, 711, 000
1881....	End of June	582, 188, 000	839, 184, 000	256, 996, 000	665, 043, 000	1, 036, 535, 000	371, 492, 000
	End of December..	514, 440, 000	859, 388, 000	344, 948, 000	596, 581, 000	1, 057, 953, 000	461, 372, 000
1882....	End of June	569, 929, 000	828, 003, 000	258, 074, 000	650, 235, 000	1, 023, 854, 000	373, 619, 000
	End of December..	558, 730, 000	831, 131, 000	272, 401, 000	642, 391, 000	1, 033, 569, 000	391, 178, 000
1883....	End of June	615, 499, 000	820, 428, 000	204, 929, 000	694, 586, 000	1, 012, 794, 000	318, 208, 000
	End of December..	558, 577, 000	829, 713, 000	271, 136, 000	643, 473, 000	1, 029, 831, 000	386, 358, 000
1884....	End of June	612, 661, 000	819, 065, 000	206, 404, 000	694, 300, 000	1, 016, 750, 000	322, 450, 000
	End of December..	517, 828, 000	854, 137, 000	336, 309, 000	602, 069, 000	1, 061, 578, 000	459, 509, 000
1885....	End of June	597, 103, 000	814, 427, 000	217, 324, 000	678, 196, 000	1, 012, 815, 000	334, 619, 000
	End of December..	618, 242, 000	858, 925, 000	240, 683, 000	700, 976, 000	1, 061, 623, 000	360, 647, 000
1886....	End of June	705, 190, 000	910, 130, 000	204, 940, 000	787, 193, 000	1, 107, 283, 000	320, 090, 000

The directors of the Imperial Bank of Germany thought that they could not comply with our request, in so far as it inquired about the proportion of their gold holdings to their other coin holdings, in the same way as that request had been complied with by the other more important banks. The question of making public statements in regard to this proportion had been considered several years before, and it had been concluded to make no such statements, since the statute establishing the bank had not contemplated them.

In the absence of authentic statements we are compelled to make an estimate, probably close to the truth, of the gold holdings of the Imperial Bank. Such an estimate is needed the more, as foreign periodicals of high standing—for example, the London Economist, on February 7, 1885—put the holdings at a figure obviously too low, namely, £6,725,000. A notice published in September, 1880, which was not contradicted and whose accuracy we have no reason to doubt, states that the coin holdings of the Imperial Bank at that time consisted of 185,000,000 marks of imperial gold coin, 317,000,000 marks of thalers, and of 33,000,000 marks of imperial silver coins. Since that date it is clear that the bank has endeavored to diminish its holding of thalers by encouraging their circulation in the community and their use by public offices. This endeavor seems to have succeeded in part, for thaler pieces held by the post-office, which were in October, 1880, only 1,061,000 marks, amounted in October, 1884, to 1,809,000 marks, and in October, 1885, to 1,626,000 marks. It may be assumed that a similar increase in the use of thalers took place in the community at large.

We probably come fairly close to the truth if we estimate 260,000,000 to 280,000,000 of silver as the amount held by the Imperial Bank in its coin holdings.

The coin holdings of the remaining banks of issue in Germany were ascertained to be as follows:

Years.	Gold coins of the Empire.	Thalers.	Silver coins of the Empire.	Imperial treasury certificates.
October	*Marks.*	*Marks.*	*Marks.*	*Marks.*
1881	79, 452, 000	2, 309, 000	1, 008, 000	....
1882	80, 038, 000	4, 290, 000	1, 129, 000	2, 539, 000
1883	77, 064, 000	5, 124, 000	1, 430, 000	1, 044, 000
1884	77, 338, 000	4, 811, 000	1, 502, 000	1, 125, 000
1885	77, 966, 000	2, 716, 000	1, 067, 000	863, 000

Imperial Bank of Russia.

Years.	Date of bank report.	Coin and bullion.		Credit notes.		Funds.
		Gold.	Silver.	Issued.	Temporarily issued.	
		Rubles.	*Rubles.*	*Rubles.*	*Rubles.*	*Rubles.*
1870	January 1	133, 129, 996. 58	8, 686, 026. 12	721, 788, 189	....	12, 000, 000. 00
1871	January 1	133, 935, 571. 28	7, 959, 204. 55	715, 809, 884	....	7, 828, 712. 94
1872	January 1	151, 593, 935. 18	4, 704, 996. 65	724, 214, 040	....	1, 828, 712. 94
1873	January 1	186, 619, 358. 57	9, 334, 984. 26	763, 869, 451	....	1, 828, 712. 94
	July 1	189, 120, 369. 45	11, 433, 973. 00	768, 369, 451	....	1, 828, 712. 94
1874	January 1	193, 189, 592. 37	24, 053, 762. 46	792, 262, 436	....	8, 932, 712. 94
	July 1	193, 997, 254. 00	23, 367, 306. 00	785, 279, 669	....	1, 828, 712. 94
1875	Januaty 1	199, 741, 320. 44	29, 657, 051. 49	797, 313, 480	....	1, 828, 712. 94
	July 1	199, 983, 587. 50	29, 414, 784. 42	797, 318, 480	....	1, 828, 712, 94
1876	January 1	201, 080, 881. 05	28, 317, 490. 88	797, 313, 480	....	1, 828, 712. 94
	July 1	145, 638, 972. 32	28, 173, 163. 46	733, 908, 498	....	1, 714, 596. 68
1877	January 1	122, 244, 807. 12	26, 740, 882. 86	735, 222, 025	54, 800, 000	31, 550, 112. 69
	July 1	122, 772, 157. 01	24, 898, 531. 43	734, 772, 025	112, 000, 000	32, 415, 114. 23
1878	January 1	124, 823, 866. 47	22, 960, 938. 22	734, 772, 025	305, 150, 000	32, 300, 997. 98
	July 1	130, 310, 829. 27	17, 473, 975. 42	726, 910, 155	429, 600, 089	32, 300, 997. 98
1879	January 1	138, 512, 267. 05	9, 283, 842. 28	720, 265, 125	467, 850, 000	28, 989, 693. 98
	July 1	144, 472, 852. 35	3, 348, 868. 71	716, 515, 125	415, 650, 000	25, 229, 693. 98
1880	January 1	151, 036, 332. 64	2, 536, 744. 47	716, 515, 125	446, 000. 000	19, 594, 963. 98
	July 1	152, 426, 129. 94	1, 158, 072. 17	716, 515, 125	377, 000, 000	19, 583, 838. 98
1881	January 1	170, 336, 427. 92	1, 136, 067. 37	716, 515, 125	417, 000, 000	....
	July 1	170, 340, 577. 22	1, 131, 918. 07	716, 515, 125	417, 000, 000	....
1882	January 1	170, 341, 624. 76	1, 130, 870. 53	716, 515, 125	417, 000, 000	....
	July 1	170, 342, 664. 88	1, 129, 830. 41	716, 515, 125	417, 000, 000	....
1883	January 1	170, 344, 234. 23	1, 128, 261. 06	716, 515. 125	417, 000, 000	....
	July 1	170, 344, 247. 17	1, 128, 248. 12	716, 515, 125	417, 000, 000	....
1884	January 1	470, 344, 274. 77	1, 128, 220. 52	716, 515. 125	387, 000, 000	....
	July 1	170, 341, 811. 36	1, 127, 683. 96	716, 515, 125	357, 000, 000	....
1885	January 1	170, 344, 826. 60	1, 127, 688. 69	716, 515, 125	357, 060, 000	....
	July 1	170, 345, 052. 41	1, 127, 412. 88	716, 433, 349	330, 000, 000	....
1886	January 1	170, 346, 090. 87	1, 126, 404. 42	716, 433, 349	330, 000, 000	....
	July 1	170, 346, 090. 87	1, 126, 404. 42	716, 433, 349	330, 000, 000	....

Since the year 1831 the "funds" account has disappeared from the public statements of the Russian Bank.

In regard to the temporary issues of credit notes, it should be said that the minister of finance has assigned to the bank, for their redemption, certain 5 per cent. Government securities to the amount of about 100,000,000 rubles; but this security is not to be actually transferred for the present.

The coin holdings of the Central Bank and of its branches, respectively, have been stated to us as follows:

Years.	Date of bank report.	Central Bank.			Branches.	
		Gold and silver.	Subsidiary coin.	Credit notes.	Coin and bullion.	Credit notes.
		Rubles.	*Rubles.*	*Rubles.*	*Rubles.*	*Rubles.*
1881	January 1	5, 001, 435. 00	175, 183. 84	18, 183, 435	2, 049, 000	30, 319, 000
	July 1	3, 791, 432. 17	234, 185. 00	71, 882, 877	1, 673, 000	44, 784, 000
1882	January 1	1, 540, 506. 89	58, 095, 22	73, 303, 750	1, 977, 000	32, 107, 000
	July 1	4, 134, 214. 91	119, 477. 42	79, 505, 295	2, 456, 000	57, 271, 000
1883	January 1	529, 640. 37	96, 857. 60	77, 323, 789	2, 844, 000	82, 897, 000
	July 1	841, 069. 80	149, 918. 44	72, 009, 818	3, 696, 000	118, 493, 000
1884	January 1	3, 660, 386. 68	30, 724. 56	49, 329, 651	4, 003, 000	94, 382, 000
	July 1	503, 006. 00	230, 319. 35	96, 841, 820	5, 076, 000	78, 601, 000
1885	January 1	27, 270, 615. 00	154, 640. 58	85, 143, 295	4, 842, 000	89, 091, 000
	July 1	44, 511, 718. 82	167, 894. 19	62, 082, 371	6, 049, 000	92, 001, 000
1886	January 1	71, 185, 536. 40	199, 703. 57	41, 641, 533	6, 351, 000	97, 748, 000
	July 1	82, 063, 715. 09	769, 913. 93	51, 468, 797	7, 413, 000	111, 202, 000

Bank of Sweden.

Years.	Date of bank report.	Coin and bullion.			Notes.	
		Gold.	Silver.	Total.	Total.	Not covered by coin.
		Crowns.	*Crowns.*	*Crowns.*	*Crowns.*	*Crowns.*
1850	End of December	615, 268	17, 679, 957	18, 295, 225	33, 543, 637	15, 248, 412
1851	do	494, 509	18, 907, 742	19, 402, 251	33, 619, 102	14, 216, 851
1856	do	232, 817	30, 479, 088	30, 711, 905	52, 459, 215	21, 774, 310
1861	do	199, 608	21, 600, 245	21, 799, 853	37, 267, 309	15, 467, 456
1865	do	2, 797, 070	12, 860, 758	15, 657, 828	30, 509, 648	14, 851, 820
1870	do	6, 997, 812	16, 941, 886	23, 939, 698	29, 309, 330	5, 369, 641
1871	do	11, 476, 972	19, 336, 798	30, 813, 770	31, 278, 786	465, 016
1872	do	6, 657, 715	16, 215, 140	22, 872, 855	45, 261, 825	22, 388, 970
1873	do	14, 915, 800	14, 436, 971	29, 352, 771	44, 725, 616	15, 372, 845
1874	do	15, 887, 131	10, 572, 936	26, 460, 067	40, 565, 966	14, 105, 899
1875	do	10, 625, 078	9, 905, 832	20, 530, 910	36, 178, 218	15, 647, 308
1876	do	10, 343, 796	3, 942, 660	14, 286, 456	30, 079, 115	15, 792, 659
1877	do	8, 754, 498	3, 591, 429	12, 345, 927	26, 948, 707	14, 602, 780
1878	do	5, 914, 727	4, 845, 125	10, 759, 852	26, 902, 616	16, 142, 764
1879	do	11, 439, 683	5, 435, 025	16, 874, 708	31, 586, 608	14, 711, 900
1880	do	11, 841, 078	4, 384, 987	16, 226, 065	39, 403, 725	23, 177, 660
1881	do	11, 639, 489	3, 957, 682	15, 597, 171	37, 798, 325	22, 201, 154
1882	do	11, 485, 336	3, 481, 716	15, 967, 052	37, 380, 309	21, 413, 257
1883	do	12, 102, 795	2, 848, 606	14, 951, 401	35, 668, 473	20, 717, 072
1884	do	13, 119, 484	2, 951, 162	16, 070, 646	37, 992, 776	21, 922, 130
1885	do	13, 744, 000	3, 109, 000	16, 853, 000	39, 341, 000	22, 488, 000
1886	End of June	12, 783, 000	3, 671, 000	16, 454, 000	42, 837, 000	26, 383, 000

The "Enskilda Bankerna," as the private banks of issue are called, were not required to redeem their notes in gold till 1875. Their cash, however, consists mainly of notes of the Bank of Sweden, which are legal tender. In the following table their holdings of such notes are stated:

Years.	Date of bank report.	Coin and notes of the Bank of Sweden.			Notes.	
		Gold.	Notes of the bank.	Total.	Total.	Not covered by coin.
		Crowns.	*Crowns.*	*Crowns.*	*Crowns.*	*Crowns.*
1875	End of June	6,156,766	8,437,404	14,594,170	58,353,855	52,197,089
	End of December	8,943,368	7,413,003	16,356,371	59,826,473	50,883,105
1876	End of June	8,023,991	8,017,660	16,041,651	61,208,759	53,164,768
	End of December	8,733,524	6,609,839	15,343,363	61,242,015	52,508,491
1877	End of June	8,624,125	6,638,524	15,262,649	60,199,890	51,575,765
	End of December	8,765,554	6,439,497	15,205,051	50,770,314	42,004,760
1878	End of June	8,579,291	7,167,189	15,746,480	49,620,526	41,041,235
	End of December	8,752,371	6,771,532	15,523,903	45,883,385	37,131,014
1879	End of June	8,233,495	11,290,952	19,524,447	43,776,093	35,542,598
	End of December	8,618,904	9,521,449	18,140,353	49,224,482	40,605,578
1880	End of June	8,696,300	10,475,446	19,171,746	46,500,796	37,804,496
	End of December	8,851,931	9,802,903	18,654,834	50,231,713	41,379,782
1881	End of June	8,383,297	9,150,549	17,533,846	49,933,943	41,550,646
	End of December	8,013,378	10,417,973	18,431,351	48,931,763	40,918,385
1882	End of June	7,890,960	8,703,530	16,594,490	48,574,671	40,683,711
	End of December	8,288,380	8,115,133	16,403,513	52,614,771	44,326,391
1883	End of June	8,286,575	9,104,231	17,390,806	52,156,462	43,869,887
	End of December	8,600,000	15,870,000	24,470,000	52,480,000	43,880,000
1884	End of June	8,203,484	8,417,629	16,621,113	51,115,280	42,911,796
	End of December	8,294,989	9,146,341	17,441,330	52,388,798	44,093,809
1885	End of June	7,898,727	8,888,251	16,786,978	50,788,988	42,890,261
	End of December	7,882,000	10,235,000	18,117,000	49,539,000	41,657,000
1886	End of June	7,849,000	10,061,000	17,910,000	48,933,000	41,084,000

Bank of Norway.

Years.	Date of bank report.	Coin and bullion.				Notes.	
		Gold.	Silver.	Total.	Of which deposits abroad.	Total.	Not covered by coin.
		Crowns.	*Crowns.*	*Crowns.*	*Crowns.*	*Crowns.*	*Crowns.*
1850	End of December		8,714,514	8,714,514	1,720,346	19,729,068	11,014,554
1851	do		9,166,330	9,166,330	1,815,821	20,735,387	11,569,057
1855	do		13,600,536	13,600,536	9,495,564	30,961,060	17,360,524
1860	do		13,916,216	13,916,216	4,539,673	25,847,040	11,930,824
1861	do		12,753,372	12,753,372	4,534,040	25,193,572	12,440,200
1865	do		19,534,572	19,534,572	3,445,008	28,524,224	8,989,652
1870	do		16,207,528	16,207,528	4,202,864	28,387,944	12,180,416
1871	do		26,355,852	26,355,852	8,746,660	33,982,176	7,626,324
1872	do		29,887,376	29,887,376	9,594,332	38,515,892	8,628,516
1873	do	28,231,948	6,141,788	34,373,736	8,858,630	47,178,532	12,804,796
1874	do	33,560,208	1,115,976	34,676,184	14,098,748	45,869,680	11,193,496
1875	do	24,743,792	215,744	24,959,536	10,500,392	37,239,532	12,279,996
1876	do	32,123,920	171.940	32,295,860	10,104,328	39,668,908	7,373,048
1877	do	21,422,153	161,565	21,583,718	6,887,478	36,309,024	14,725,396
1878	do	18,948,553		18,948,553	5,995,493	30,967,687	12,019,154
1879	do	26,097,439		26,097,439	8,373,654	32,719,923	6,622,484
1880	do	33,482,366		33,482,366	10,330,571	38,713,675	5,231,309
1881	End of June	28,797,676		28,797,676	9,240,178	40,651,975	[illegible],854,299
	End of December	29,913,126		29,913,126	8,771,374	37,653,846	7,740,720
1882	End of June	30,396,209		30,396,209	8,559,247	42,421,196	12,024,987
	End of December	32,861,096		32,861,096	10,461,065	40,578,655	7,717,559
1883	End of June	31,423,334		31,423,334	10,186,948	42,175,611	10,752,277
	End of December	34,871,372		34,871,372	11,773,914	40,955,626	6,084,254
1884	End of June	34,597,375		34,597,375	11,296,916	43,821,248	9,223,873
	End of December	34,300,305		34,300,305	11,077,441	38,983,523	4,683,218
1885	End of June	30,595,452		30,595,452	9,951,527	42,843,006	12,247,554
	End of December	28,675,609		28,675,609	9,267,831	37,147,456	8,471,847
1886	End of June	27,552,785		27,552,785	9,226,113	39,274,840	11,722,055

Bank of Denmark.

Years.	Date of bank report.	Coin and bullion.			Notes.	
		Gold.	Silver.	Total.	Total.	Not covered by coin.
		Crowns.	*Crowns.*	*Crowns.*	*Crowns.*	*Crowns.*
1852	End of December		14, 612, 320	14, 612, 320	(40, 000, 000)	25, 387, 680
1860	do		21, 852, 000	21, 852, 000	46, 681, 000	24, 829, 000
1865	do		19, 734, 000	19, 734, 000	45, 644, 000	25, 910, 000
1870	do		28, 137, 000	28, 137, 000	53, 647, 000	25, 510, 000
1871	do		39, 403, 000	39, 403, 000	61, 885, 000	22, 482, 000
1872	do	15, 204, 000	27, 921, 000	43, 125, 000	67, 508, 000	24, 383, 000
1873	do	28, 553, 000	21, 073, 000	49, 626, 000	75, 794, 000	26, 168, 000
1874	do	33, 360, 000	15, 061, 000	48, 421, 000	71, 636, 000	23, 215, 000
1875	do	38, 385, 000	8, 032, 000	46, 417, 000	70, 581, 000	24, 164, 000
1876	do	44, 970, 000	2, 156, 000	47, 126, 000	72, 318, 000	25, 192, 000
1877	do	33, 759, 000	3, 678, 000	37, 437, 000	63, 015, 000	25, 578, 000
1878	do	37, 667, 000	3, 820, 000	41, 487, 000	66, 414, 000	24, 927, 000
1879	do	41, 988, 000	3, 623, 000	45, 611, 000	69, 399, 000	23, 788, 000
1880	do	52, 487, 000	3, 010, 000	55, 495, 000	78, 588, 000	23, 091, 000
1881	do	48, 802, 000	2, 856, 000	51, 658, 000	75, 219, 000	23, 561, 000
1882	End of June	44, 202, 000	3, 199, 000	47, 401, 000	71, 752, 000	24, 351, 000
	End of December	48, 214, 000	2, 924, 000	51, 148, 000	76, 213, 000	25, 075, 000
1883	End of June	48, 058, 000	3, 079, 000	51, 137, 000	75, 534, 000	24, 397, 000
	End of December	48, 737, 000	2, 784, 000	51, 521, 000	75, 566, 000	24, 045, 000
1884	End of June	46, 370, 000	3, 078, 000	49, 448, 000	74, 915, 000	25, 467, 000
	End of December	46, 509, 000	3, 090, 000	49, 599, 000	72, 688, 000	23, 089, 000
1885	End of June	43, 514, 000	3, 479, 000	46, 993, 000	72, 058, 000	25, 065, 000
	End of December	46, 264, 000	3, 385, 000	49, 649, 000	73, 482, 000	23, 833, 000

COIN AND BULLION HELD AND NOTES ISSUED BY THE TREASURY AND THE NATIONAL BANKS OF THE UNITED STATES.*

1.—*The Treasury.*

Years.	Date of report.	Gold, coined and uncoined.	Standard silver dollars.	Other silver coins and silver bars.	Total silver.	Per cent. of silver to total coin and bullion.	Legal-tender notes June 30.	Price of 100 dollars gold on Jan. 1 in notes.
1876	October 2	$55, 423, 059		$6, 029, 367	$6, 029, 367	9. 8	369, 772, 284	$112. 75
1877	October 1	107, 039, 529		7, 425, 454	7, 425, 454	6. 5	359, 764, 332	107. 00
1878	October 1	136, 036, 302	$12, 155, 205	15, 777, 937	27, 933, 142	17. 0	346, 681, 016	102. 82
1879	January 1	112, 703, 342	17, 249, 740	15, 169, 611	32, 419, 351	22. 3	346, 681, 016	100. 00
1880	November 1	133, 679, 349	47, 156, 588	30, 820, 561	77, 977, 149	36. 8	346, 681, 016	100. 00
1881	November 1	167, 781, 909	66, 576, 378	29, 409, 262	95, 985, 640	36. 4	346, 681, 016	100. 00
1882	November 1	148, 435, 473	92, 414, 977	30, 761, 985	123, 176, 962	45. 4	346, 681, 016	100. 00
1883	November 1	157, 353, 760	116, 036, 450	31, 648, 789	147, 685, 239	48. 4	346, 681, 016	100. 00
1884	November 1	134, 670, 790	142, 926, 725	33, 992, 254	176, 918, 979	56. 8	346, 681, 016	100. 00
1885	November 1	142, 338, 589	163, 817, 342	26, 806, 072	190, 623, 414	57. 3	346, 681, 016	100. 00

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* In the statements of the coin holdings of the Treasury, gold for which gold certificates are outstanding is not included. This holding of gold amounted, on November 1, 1882, to $6,962,280; on November 1, 1883, to $48,869,940; on November 1, 1884, to $85,301,190; on November 1, 1885, to $106,465,420. On the other hand, gold certificates held by the national banks are counted as part of their coin reserve. A provisional report of the Director of the Mint of date August 19, 1886, gives the coin holdings of the Treasury, the national banks, and other banks, as follows:

	Gold.	Silver.
In Treasury	$231, 915, 699	$213, 625, 810
In national banks	104, 530, 587	9, 670, 567
In other banks and general circulation	254, 259, 840	88, 953, 969
Total	590, 706, 126	312, 250, 346

2.—*State and National Banks, separately and combined with the Treasury.*

The banking system of the United States underwent a number of different phases up to the establishment of the national banking system in 1863. Until the discovery of the rich gold fields in California, and the subsequent discovery of the silver mines of Nevada, the coin holdings of the banks were comparatively small; and during the period 1863–'78, when inconvertible paper money was in circulation, the coin holdings of the banks were limited to the quantities needed for carrying on the few transactions made in that metal. The following summary statement gives some indications as to the state of things in earlier times:

	Coin.	Notes.
1841 in 784 State banks	$34,813,958	$107,290,214
1851 in 879 State banks	48,071,048	155,165,251
1861 in 1,601 State banks	87,674,507	202,005,767
1866 in 1,644 national banks	9,226,832	280,253,818
1871 in 1,767 national banks	13,252,998	315,519,117

Coin in Treasury:

1841	$28,685,111
1851	40,158,353
1861	30,963,858
1866	165,301,656
1871	138,589,176

Years.	Date of bank report.	National banks.			Banks and Treasury together.		
		Coin.		Notes.	Coin and bullion.		Notes.
		Gold.	Silver.		Gold.	Silver.	
1876	October 2	$21,400,000		$292,200,000	$82,900,000		$651,000,000
1877	October 1	22,700,000		291,100,000	136,300,000		650,800,000
1878	October 1	30,700,000		301,900,000	194,700,000		648,600,000
1879	ry 1	$35,039,201	$6,460,557	323,791,674	$158,680,355	$38,879,808	670,472,690
1880	November 1	102,851,032	6,495,477	343,834,107	253,632,511	84,472,626	690,515,123
1881	November 1	107,222,169	7,112,567	360,344,250	294,905,569	103,098,207	707,025,266
1882	November 1	94,127,324	8,234,739	362,727,747	260,455,297	131,411,701	709,408,763
1883	November 1	97,570,057	10,247,926	352,013,787	273,179,117	157,933,165	698,694,803
1884	November 1	117,185,407	8,092,557	333,559,813	277,784,954	185,012,536	680,240,829
1885	November 1	161,657,121	9,120,802	315,847,168	335,251,499	199,744,216	662,528,184

Summary of holdings of gold by important banks, etc., at the close of the years 1872–1885 *(so far as information is at hand).*

Banks and treasuries.	1872.	1873.	1874.	1875.	1876.
	Marks.	*Marks.*	*Marks.*	*Marks.*	*Marks.*
Bank of England and Scotch and Irish banks of issue	622, 012, 000	595, 442, 000	581, 932, 000	596, 241, 000	731, 093, 000
Australian banks	....	158, 098, 000	165, 514, 000	172, 594, 000	192, 107, 000
Bank of the Netherlands	47, 548, 000	67, 953, 000	94, 006, 000	117, 726, 000	109, 239, 000
Bank of Belgium	30, 303, 000	30, 245, 000	46, 755, 000	62, 324, 000	63, 232, 000
Bank of France	526, 960, 000	489, 040, 000	809, 680, 000	989, 440, 000	1, 224, 320, 000
Italian banks of issue and Italian treasury	73, 503, 000	73, 173, 000	72, 777, 000	53, 805, 000	60, 396, 000
Austro-Hungarian Bank	138, 808, 000	141, 055, 000	145, 483, 000	135, 708, 000	140, 444, 000
Bank of Sweden, and other banks of issue in Sweden	7, 490, 000	16, 780, 000	17, 873, 000	22, 015, 000	21, 462, 000
Bank of Norway	inconsiderable.	23, 831, 000	21, 894, 000	16, 024, 000	24, 772, 000
National Bank of Denmark	17, 105, 000	32, 122, 000	37, 530, 000	43, 183, 000	50, 591, 000
Bank of Russia	597, 182, 000	618, 207, 000	639, 172, 000	643, 459, 000	391, 183, 000

Banks and treasuries.	1877.	1878.	1879.	1880.	1881.
	Marks.	*Marks.*	*Marks.*	*Marks.*	*Marks.*
Bank of England and Scotch and Irish banks of issue	646, 861, 000	719, 123, 000	693, 410, 000	632, 672, 000	554, 710, 000
Australian banks	174, 773, 000	167, 305, 000	206, 135, 000	243, 673, 000	224, 950, 000
Bank of the Netherlands	85, 866, 000	75, 878, 000	124, 823, 000	96, 665, 000	30, 869, 000
Bank of Belgium	48, 960, 000	49, 064, 000	57, 808, 000	58, 450, 000	61, 872, 000
Bank of France	941, 680, 000	786, 880, 000	593, 280, 000	451, 415, 000	524, 557, 000
Italian banks of issue and Italian treasury	61, 444, 000	63, 492, 000	61, 342, 000	62, 093, 000	57, 644, 000
Austro-Hungarian Bank	134, 752, 000	134, 749, 000	117, 264, 000	130, 021, 000	137, 451, 000
Bank of Sweden, and other banks of issue in Sweden	19, 710, 000	16, 500, 000	22, 566, 000	23, 280, 000	22, 109, 000
Bank of Norway	16, 351, 000	14, 572, 000	19, 939, 000	26, 046, 000	23, 784, 000
National Bank of Denmark	37, 979, 000	42, 375, 000	47, 237, 000	59, 048, 000	54, 902, 000
Bank of Russia	399, 436, 000	443, 239, 000	483, 316, 000	545, 077, 000	545, 093, 000
Treasury and banks of issue in United States	....	....	666, 457, 000	1, 065, 257, 000	1, 238, 603, 000

Banks and treasuries.	1882.	1883.	1884.	1885.
	Marks.	*Marks.*	*Marks.*	*Marks.*
Bank of England and Scotch and Irish banks of issue	575, 593, 000	593, 017, 000	567, 579, 000	564, 824, 000
Australian banks	215, 761, 000	210, 712, 000	283, 668, 000	263, 500, 000
Bank of the Netherlands	8, 964, 000	39, 962, 000	46, 150, 000	81, 437, 000
Bank of Belgium	57, 508, 000	57, 508, 000	52, 740, 000	55, 600, 000
Bank of France	771, 585, 000	760, 443, 000	801, 135, 000	925, 932, 000
Swiss banks of issue	26, 558, 000	31, 521, 000	37, 506, 000	39, 330, 000
Italian banks of issue and Italian treasury	61, 759, 000	488, 844, 000	493, 026, 000	396, 800, 000
Austro-Hungarian Bank	158, 345, 000	155, 364, 000	157, 644, 000	138, 145, 000
Bank of Sweden, and other banks of issue in Sweden	23, 370, 000	23, 291, 000	24, 091, 000	24, 595, 000
Bank of Norway	25, 200, 000	25, 985, 000	26, 126, 000	21, 834, 000
National Bank of Denmark	54, 241, 000	54, 829, 000	52, 323, 000	52, 047, 000
Bank of Russia	545, 102, 000	545, 102, 000	545, 103, 000	545, 107, 000
Treasury and banks of issue in United States	1, 093, 912, 000	1, 147, 352, 000	1, 166, 697, 000	1, 408, 056, 000

In this table we have included only positive statements, such as reached us in direct reports or letters from official sources. Where we had no statements for the close of a year, we have inserted the statement for the date nearest the close; as, for instance, in the case of the United States.

If we now make a cautious estimate of the coin holdings of banks not included in the preceding table, we can present the following summary statement of the probable available holdings of gold in all the reservoirs of civilized countries at the close of each year from 1877 to 1885:

Years.	Marks.	Kilograms fine.
1877	2, 890, 000, 000	1, 035, 800
1878	2, 850, 000, 000	1, 021, 600
1879	3, 500, 000, 000	1, 254, 000
1880	3, 790, 000, 000	1, 358, 500
1881	3, 900, 000, 000	1, 397, 800
1882	4, 070, 000, 000	1, 458, 100
1883	4, 600, 000, 000	1, 648, 800
1884	4, 680, 000, 000	1, 677, 400
1885	5, 040, 000, 000	1, 806, 500

For the gold holdings of the Imperial Bank of Germany we have made estimates based on the data mentioned above. In regard to the banks of Spain, Portugal, Roumania, Greece, Canada, Cape Colony, etc., for which we have statements for occasional years, we have completed the figures as well as might be. It must therefore be admitted that the totals given present by no means correct figures. On the other hand, it must be borne in mind that the mistakes can have but a slight effect on the totals.

We give these totals with all possible qualification, yet we are convinced that they do not vary greatly from the facts. It is hardly necessary to say anything as to the importance of continuous statements of this kind.

2. CIRCULATION AND SUPPLY OF GOLD AND SILVER COINS OVER AND ABOVE THE HOLDINGS OF BANKS, AND THE PROBABLE TOTAL MONETARY SUPPLY OF THE PRECIOUS METALS.

We have already seen that in modern times a very considerable part of the coin of civilized countries accumulates in the banks or public treasuries, which issue bank notes or paper money, or open a credit to depositors. The greater is the use of such substitutes for coin, the less will be the amount of coin actually in circulation. The denominations in which coins are struck have much influence on the extent of this substitution; for the greater the range between the different denominations, the less can actual coin be dispensed with.

To get some conception of the total monetary supply of a country we must resort, not only to the statements of the coin-holding banks, but also to estimates of the coin in the hands of the community. It need not be said that such estimates are difficult to make and uncertain in their results, especially where there has not been within a comparatively recent period a recoinage, and substitution of new for old coins. Notwithstanding the difficulty and uncertainty of the task, it has been attempted from time to time on various methods. It would carry us too far to discuss the methods by which the problem has been approached, and we will give without further ado those estimates of the different countries which upon the whole seem to us the most trustworthy. We must, however, acknowledge the services of the Directors of the Mint of the United States, and of Mr. Ottomar Haupt, who for a number of years have given great attention and much labor to this problem. Special credit belongs to the Histoire Monétaire de Notre Temps of the latter gentleman, published in April of the present year. The various investigations have yielded results which usually agree, and such agreement warrants a certain degree of confidence that the statements which are to follow come as near to the facts as is necessary for our purpose.

For brevity's sake we do not give separately the supply of coins in the hands of the community, but give the total coin holdings of the banks and of the community. If it is desired to ascertain the coin in circulation over and above that held by the banks, this can readily be done by subtracting from the totals the amounts already given for the various banks and treasuries.

England.—A communication made by the master of the mint, Mr. Freemantle, in answer to an inquiry by the Government of the United

States, gives the following estimates of the coin in use in Great Britain and Ireland at the close of 1884:

	Amount.	Equivalent in German marks.
Gold in the banks and in circulation	£123,309,000	2,466,200,000
Silver in the banks and in circulation	19,877,000	397,500,000
Notes of Bank of England and other banks	40,924,713	818,500,000

Mr. Haupt estimates the money in use in England at the close of 1885 as follows:

	Amount.	Per head of population.	
		In English currency.	In German currency.
		£ s. d.	*Marks.*
Gold in the banks	£36,000,000	3 0 0	60.00
Gold in circulation	75,000,000		
Silver coin	21,600,000	12 0	12.00
Copper coin	1,600,000	10	.80
Uncovered notes	12,000,000	6 7	6.50
Total	146,200,000	....	....

This latter estimate, which agrees in the main with those published by us at earlier dates, is probably close to the truth. Variations of several percents per year, above or below the calculated amounts, are inevitable in a country whose international trade is as large as that of England, especially in consequence of the great movement of the precious metals to and from the United States and the periodic flow of silver to and from the colonies. But such changes are of no permanent importance. A factor of essential importance is the statutory provision that no note under £5 shall be issued in England. In Scotland and in Ireland, where £1 notes circulate, the use of sovereigns, as is well known, is very limited. Should the issue of £1 notes be permitted in England—and this has been proposed in Parliament, though as yet peremptorily rejected—a great increase would undoubtedly take place in the use of notes by the community, and the supply of gold in England would diminish appreciably; unless, indeed, it were enacted at the same time that the whole or the greater part of such notes should be covered by gold in the hands of the Bank of England.

For the Australian colonies we may estimate the monetary supply of gold at about £22,000,000 and that of subsidiary silver at about £1,300,000.

The supply of coin in the British possessions, outside of India, Australasia, and Mauritius, is probably above rather than below £12,000,000 of gold and £2,000,000 of silver.

The Netherlands.—The "Algemeen Verslag van het muntcolleg over 1885," gives the following statement of the coin probably in use:

	Florins.
Gold coins, 10-florin pieces (74,974,860 florins have been coined)	47,247,550
Legal-tender silver	150,511,458
Subsidiary silver	7,703,419
Copper coins	1,749,000

Mr. Haupt makes the following estimate for the Netherlands and their colonies:

	Florins.
Silver coins:	
In the bank	96,000,000
In circulation at home	55,000,000
In circulation in colonies	190,000,000
Gold coins and bars in the bank	48,000,000
Gold coins:	
In circulation at home	15,000,000
In circulation in the colonies	3,000,000
Subsidiary coin:	
At home	9,000,000
In the colonies	18,000,000
Government paper money	10,000,000
Uncovered notes	50,000,000
Total	494,000,000

Per head of population there were (at home) 15.75 florins gold, 37.75 florins legal-tender silver, and 15 florins uncovered notes and Government paper.

Latin Union.—The states which form the so-called Latin Union—France, Belgium, Italy, Switzerland, and Greece—must be considered, during the continuance of the Union, as a monetary unit; since the treaties provide that not only the gold coins, but also the silver 5-franc pieces of each country, shall be accepted in all payments to every country. They therefore circulate indiscriminately in the community at large. The total coinage in the countries of the monetary union was up to July, 1885, as follows, the figures being taken from the official reports at the seventh session of the Mint Conference of these countries in 1885:

	France.	Italy.	Belgium.	Switzerland.	Greece.
Gold coin:	*Francs.*	*Francs.*	*Francs.*	*Francs.*	*Francs.*
Before the treaty of 1865.	6,501,030,710	424,465,950	35,168,085	....	....
After the treaty of 1865	2,150,523,030	238,220,245	563,474,660	5,000,000	12,000,000
Total	8,651,553,740	662,686,195	598,642,745	5,000,000	12,000,000
Silver 5-franc pieces:					
Before the treaty of 1865	4,435,139,860	184,621,950	145,180,490	2,500,000	....
After the treaty of 1865.	625,466,380	359,581,360	350,497,720	7,978,250	15,462,865
Total	5,060,606,240	544,203,310	495,678,210	10,478,250	15,462,865
Silver subsidiary coins	237,073,624	170,000,000	33,000,000	18,000,000	10,800,000
Nickel, bronze, and copper coins	64,030,962	76,140,443	12,269,983	4,480,727	6,816,065

In these tables the statement of the Belgium coinage includes 14,646,025 francs of 25-franc and 10-franc pieces, which have been withdrawn by the Belgian Government; while the statement of Italian coinage includes 90,100,040 francs of 80-franc and 40-franc pieces, and 10,919,370 francs of 10-franc pieces, similarly withdrawn. On the other hand, the statement of coinage in France is exclusive of amounts withdrawn.

Setting aside subsidiary coins and legal-tender coins withdrawn by the Government, we still find that the coinage of the countries of the Latin Union up to date amounts to the gigantic sum of 9,814,217,245 francs in gold pieces, and 6,126,428,875 francs in silver 5-franc pieces. Now the question, a very important question, arises, how much of this enormous coinage is still on hand in the banks or in ordinary circulation; and how much of each kind of coin is in the different countries?

The question is one of the utmost importance for the future settlement of the Latin Union and the future mint policy of the countries composing it. In order to approach it, we must consider the countries singly.

France has for years possessed, and still possesses, the greatest supply of coin. Yet the estimates as to the extent of its supply vary greatly. Three times, in 1868, 1878, and 1885, the French Government has required about 20,000 public offices to make a statement on a given day of their total holding of gold and silver coin, and of its composition according to the country coined, and according to the date of the French coins.

The results were as follows:

Years.	Total.	Gold coins.	Silver legal tender.	Gold.	Silver.
	Francs.	*Francs.*	*Francs.*	*Per cent.*	*Per cent.*
1868	29,707,260	29,028,140	679,120	97.72	2.28
1878	22,945,770	16,878,740	6,067,030	73.55	26.45
1885	17,108,315	11,860,430	5,247,885	69.33	30.67

These amounts were divided between French and foreign coins as follows:

Years.	French gold coins.		Foreign gold coins.		French legal-tender silver.		Foreign legal-tender silver.	
	Francs.	*Per cent.*	*Francs.*	*Per cent.*	*Francs.*	*Per cent.*	*Francs.*	*Per cent.*
1868	27,684,300	95.4	1,343,840	4.6	638,405	94.0	40,715	6.0
1878	14,705,450	87.1	2,173,290	12.9	4,124,945	68.0	1,942,085	32.0
1885	10,631,130	89.6	1,229,300	10.4	3,738,795	71.2	1,509,090	28.8

This indicates that the number of silver 5-franc pieces had increased considerably in 1878 as compared with 1868, but had fallen off since 1878. The same was the case in regard to foreign coins, both gold and silver. It will be noticed that the total quantity counted was smallest at the latest date, which may be accounted for by the fact that many offices, in order to avoid the trouble of sorting and counting large quantities of coin, exchanged coins on hand for bank-notes just before the day for which the count was ordered. Other mistakes were doubtless made in the conduct of these inquiries, but hardly exercised a great influence on the general results. M. de Foville believed that these inquiries would enable conclusions to be reached, on a method not uncommon in such matters, as to the total circulation of coin in France. In an essay read before the Statistical Society in Paris on October 21, 1885, he put the total supply of coin in France as follows: 4,000,000,000 francs in 20-franc pieces, 600,000,000 in 10-franc pieces, and 2,800,000,000 in silver 5-franc pieces, a total of 7,400,000,009 francs. Adding to these other gold coins—that is, 100, 50, 40, and 5-franc pieces, of which a total of 518,000,000 francs were originally coined—we get a total monetary supply of nearly eight milliards, a supply such as no other people possesses.

Mr. Haupt makes an estimate varying somewhat from this. He pays especial attention to the recorded import and export of the precious metals in France since 1815, and reaches the following results for the close of 1885:

	Amount.	Per head of population.
Gold:	*Francs.*	*Francs.*
In the bank	1,157,000,000	117.20
In circulation	3,300,000,000	
Silver:		
Legal tender in the bank	1,086,000,000	91.80
Legal tender in circulation	2,400,000,000	
Subsidiary coin	250,000,000	6.50
Copper subsidiary coin	60,000,000	1.60
Total	8,253,000,000	217.10
Uncovered notes	675,000,000	17.70

Our own opinion is that this second estimate puts the supply of gold and silver coins too high, and that, on the other hand, M. de Foville's estimate puts the supply of gold coins and of subsidiary coins too high. We should probably get closer to the truth by putting the French supply of coin, at the close of 1885, at about 4,200,000,000 francs in gold and gold coins, about 3,000,000,000 in silver 5 franc pieces, and 300,000,000 in subsidiary coin.

In regard to Belgium, it is well known that estimates differing widely were made at the conferences on the continuance of the Latin Union. They differed greatly as to the probable supply of the silver 5-franc pieces in Belgium, and as to the amount of silver 5-franc pieces of Belgian coinage within and without the country. On the basis of what was said at this conference we conclude that the supply of coin in Belgium at the close of 1885 is probably not far from the following:

	Amount.	Per head of population (about).
Gold:	*Francs.*	*Francs.*
In the bank	69,500,000	66
In circulation	310,500,000	
Silver:		
In the bank	32,700,000	43
In circulation	217,300,000	
Subsidiary coin, silver and copper	48,000,000	8
Uncovered notes	265,000,000	46

In regard to note circulation, it should be remembered that bills of exchange on foreign countries to the amount of from 70,000,000 to 80,000,000 francs, convertible into gold at any moment, are constantly held by the National Bank for the redemption of notes.

The resumption of specie payments in Italy has led in recent years to considerable changes in its coin circulation; and, indeed, the period of transition is not yet over. This explains the great differences between the various estimates made from time to time. Before the coin loan of 644,000,000 lire in 1881, it was estimated that the coin supply of Italy amounted to about 209,000,000 lire gold, 171,000,000 lire legal-tender silver, and 64,000,000 lire subsidiary silver coin.

In a commission report of June 3, 1885, Representative Simonelli estimated the monetary supply of the precious metals in Italy at that time as follows:

	Gold.	Silver legal tender.	Silver subsidiary coin.
	Lire.	*Lire.*	*Lire.*
In public offices	224,400,000	5,900,000	26,100,000
In banks	280,800,000	33,100,000	14,700,000
In private hands	60,000,000	50,000,000	129,200,000
Total	565,200,000	89,000,000	170,000,000

For the close of 1885 the best informed Italian statisticians made the following estimates:

	Lire.
Gold:	
In treasury	219,000,000
In banks	280,000,000
In circulation	75,000,000
Silver:	
Legal tender in treasury	80,000,000
Legal tender in banks	44,000,000
Legal tender in circulation	50,000,000
Subsidiary coin	171,000,000
Copper subsidiary coin	75,000,000
Total coin	994,000,000
Government paper money	238,000,000
Uncovered notes	612,000,000

Included in this table are 18,000,000 lire of old and foreign gold coins, and 74,000,000 lire of old silver coins which had been withdrawn.

Per head of population there were at the close of 1885 18.50 lire gold, 3.30 lire legal-tender silver, and 5.70 lire of subsidiary silver coin.

Mr. Ferraris put the monetary supply of the precious metals in Italy at the end of June, 1885, at the following figures:

	Amount.	Per head (about).
	Francs.	*Marks.*
Gold, at most	600,000,000	17
Five-franc pieces	110,000,000	3
Silver subsidiary coins	170,000,000	5
Copper coins	76,000,000	....
Bourbon piasters, etc	27,000,000	....

In regard to Switzerland, also, estimates vary greatly, especially in the matter of silver 5-franc pieces. Former estimates were apt to put the supply of this sort of coin in Switzerland at no more than 40,000,000 francs, while later estimates put it as high as 150,000,000 francs. These estimates must have been in the mind of the Swiss delegate to the Paris conference of 1885, who said, at the eleventh session of the conference, that inquiries made in August, 1885, indicated that nearly half (49.5 per cent.) of the 5-franc pieces circulating in Switzerland consisted of Italian pieces, and that this, on a total circulation of at least 100,000,000 francs, would indicate that the Italian pieces amounted to 50,000,000 francs.

If we include the coin holdings of the Swiss banks of issue, which, as stated above, amounted at the close of 1885 to 49,163,000 francs of gold and 20,438,000 francs of silver, we believe that the probable monetary supply of Switzerland may be cautiously stated for the close of 1885 as follows:

	Amount.	Per head (about).
	Francs.	*Francs.*
Gold	90,000,000	31.0
Legal-tender silver	70,000,000	24.1
Subsidiary coin	20,000,000	6.9
Notes not covered by coin	54,510,000	18.8

Austro-Hungary.—So far as Austro-Hungary is concerned, we need add no sum of importance to the coin holdings of the Austro Hungarian bank, which were, at the close of 1885, 69,080,000 florins of gold and 129,720,000 florins of silver. The circulation of irredeemable paper money since 1848 and the discontinuance of the coinage of silver, which had been maintained for a number of years, have driven abroad all but the subsidiary coins. We probably get close to the truth by putting the total monetary supply at the close of 1885 at about 80,000,000 florins of gold and about 150,000,000 florins of silver, there being at the same time 48,000,000 florins of subsidiary coin, 165,000,000 florins of bank-notes, and 338,000,000 florins of Government paper money.

Germany.—An estimate for the year 1870, whose correctness has not been doubted, and which of course does not include Alsace-Lorraine, puts the monetary supply as follows:

	Amount.	Per head (about).
	Marks.	*Marks.*
Domestic gold coins ... about	91,000,000	....
Legal-tender silver	1,500,000,000	....
Subsidiary coins	85,000,000	....
Foreign coins	40,000,000	....
Hamburg bank money	86,000,000	....
Total	1,752,000,000	45
Paper money of various states	184,000,000	14
Uncovered notes	359,000,000	
All told	2,295,000,000	59

By the close of 1880 all older German coins, barring a remnant of thaler pieces, had been withdrawn from circulation and either recoined or melted into bullion. There were withdrawn of old silver coins 1,080,486,138 marks, of which 530,334,687 marks were in thaler pieces. From the silver obtained by melting down these coins there were taken, up to the close of 1885, 222,245,742 kilograms fine for new imperial silver coins, and 3,552,448 kilograms were sold. The remainder (94,468 kilograms at the close of 1884) is still in the Government's possession.

The total coinage of the German Empire, exclusive of coins withdrawn in the meanwhile, has been, up to the close of 1885, 1,928,890,830 marks in gold coins, 444,491,484 marks in silver coins, and 44,842,462 marks in nickel and copper coins.

The new silver coins and the other subsidiary coins struck since 1873, barring an uncoined portion of 20-pfennig pieces and an insignificant loss by accident, are still in circulation; but, on the other hand, considerable sums of the gold coins have disappeared from circulation. There have disappeared, in the first place, 120,000,000 marks in double crowns, which are absorbed in the war treasury at Spandau. This sum is certain; but the quantity melted down for use in the arts or exported to foreign countries is quite uncertain. A part of the quantity exported, especially that which is held by foreign banks in its original form, is not permanently withdrawn from circulation in Germany, since a favorable rate of exchange will doubtless bring it back to Germany sooner or later. As the rate of exchange in recent years has been generally in favor of Germany, it is probable that the only coin which has been remelted at foreign mints or has been used in the arts constitutes a loss to Germany's possible supply of gold. Needless to say, we must add to this supply the gold held by the Imperial Bank in bars and in foreign coins.

Mr. Haupt ascertained that at the close of 1885 there had been undoubtedly recoined at foreign mints German gold coins to the amount of 161,400,000 marks. He estimates that about 110,000,000 marks of these coins had been melted for use in the arts. This is a mere guess; but, as we know no reason for believing the amount to be larger or smaller, we accept it.

The sum of gold bars and of foreign gold coin held by the Imperial Bank at the close of 1885 was, reckoning the pound fine at 1,392 marks, 193,706,605 marks.

We have already published the statement which follows, of the supply of thaler pieces. We still consider that statement to be proximately correct; and we reproduce it, since it is connected with a point of great practical importance for Germany.

At the beginning of the reform of the German coinage it was calculated that there could have been in circulation 367,746,038 thaler pieces, that is, 1,103,238,114 marks. When the 1 and 2 florin pieces were entirely withdrawn, it was found that about 21 per cent. of the original coinage had disappeared. If we assume the same proportion for the thaler pieces, there would have been present in the year 1870 about 854,000,000 marks of those coins. Up to May, 1879, when the withdrawal of thalers ceased, there had been drawn in 530,334,687 marks; so that there are probably still in circulation 323,665,000 marks. All the Austrian thalers still in existence have made their way to Germany. Of these, 31,060,321 pieces had been coined, which would leave in circulation, making the same deduction that was made before, 73,600,000 marks, which should be added as part of the existing supply. The total probable supply in Germany of thalers which are still full legal tender may therefore be put at nearly 400,000,000 marks. The supply is generally put at 450,000,000 marks, in order to prevent any charge of intentionally understating it.

Government notes were originally issued to the amount of 174,120,130 marks. The quantity has decreased in accordance with the provisions of law, and amounted in March, 1886, to 137,500,000 marks.

We may therefore make the following statement of the extent and composition of the money in circulation and of the precious metals in Germany at the close of 1885:

	Marks.
Imperial gold coins (exclusive of the Spandau hoard)	1,550,000,000
Gold in bars and foreign coins at the Imperial Bank	194,000,000
Thalers, German and Austrian, at most	450,000,000
Imperial silver coins	442,000,000
Nickel and copper coins	40,000,000
Total coin and bullion	2,676,000,000
Notes of the Empire (*Reichskassenscheine*)	138,000,000
Uncovered notes	361,000,000
All told	3,175,000,000

The deposits in the banks, which are to be considered equivalent to a note circulation, would give an addition of 300,000,000 marks to this total.

Per head of population Germany possessed, for a total population of 46,840,000, 37.2 marks of gold, 10 marks of legal tender silver and subsidiary coin, 10.7 marks of credit money—that is, a circulating medium of all kinds per head of population of about 68 marks (the deposits not being reckoned), as against 58.5 marks in the year 1870.

Scandinavian countries.—Since the treaty of 1873 Sweden, Norway, and Denmark have a close monetary union. The coins of each country being legal tender in the other countries, they are to be considered as one country, so far as the supply and circulation of money are concerned.

As appears from the tables printed above, the three countries coined from 1873 to the close of 1885, 94,462,925 crowns of gold and 39,438,572 crowns of silver. This gives for a population of 8,400,000, 11.2 crowns of gold per head and 4.7 crowns of silver per head. The figure for silver may be considered accurate, since the silver is a subsidiary coin whose nominal value exceeds its intrinsic value by more than 30 per cent., and which is therefore neither melted down nor exported. The case is different with the gold coins, in regard to which we know from the reports of foreign mints and from other sources that considerable sums have been exported and melted. On the other hand, the Scandinavian public banks hold large sums of gold in bars and in foreign coin as a reserve for their note circulation. Moreover, the Bank of Norway, over and above its domestic holdings of gold, has a not inconsiderable supply of gold on deposit at foreign banks and immediately available. The money in circulation in the three countries at the close of 1885 may be estimated as follows:

	Denmark.	Sweden.	Norway.
Gold:	*Crowns.*	*Crowns.*	*Crowns.*
In the banks	46, 260, 000	21, 630, 000	19, 410, 000
In circulation	3, 000, 000	11, 000, 000	1, 000, 000
Silver coins	18, 500, 000	15, 500, 000	5, 000, 000
Copper coins	700, 000	900, 000	300, 000
Uncovered notes	23, 830, 000	64, 140, 000	17, 740, 000
Total	92, 290, 000	113, 170, 000	43, 450, 000

If we consider the gold which is kept abroad a part of the reserve for the Norwegian bank notes the amount of uncovered notes becomes no more than 8,472,000 crowns.

These estimates differ from those last presented by Mr. Haupt. We put the amount of gold coins in active circulation in Sweden and Norway at a much lower figure than that gentleman. Our conclusion rests on numerous inquiries made in these countries. The experience of the Scandinavians proves clearly that where a firmly organized banking system has possessed complete confidence for a considerable period of time, and where the population has become used to small bank notes, these latter form the chief circulating medium, while gold coins, notwithstanding the gold standard, make their appearance to a very slight extent in general trade, and accumulate in the banks.

Russia.—Here the existence of irredeemable paper money leads us to make our estimate of the monetary supply in much the same way as in Austro-Hungary. The stated quantity held by the Bank of Russia and the quantity of subsidiary coin are to be supplemented by some small amount which must be guessed. Although the irredeemable paper money has existed for many years and has driven all coin of full weight out of circulation, a larger or smaller part of the coin formerly in circulation is still held by the people. This conclusion is based on the common experience that when the resumption of specie payment takes place in a civilized country, a great number of coins make their appearance without anyone's knowing exactly whence they come. Let us add to the supply of gold held by the Government bank as given above, 10,000,000 rubles of gold coin and about the same amount of silver legal tender coins; let us add also 80,000,000 or 90,000,000 rubles in silver and copper subsidiary coin; and we get (apart from the so-called latent reserve) a statement which is not too low of the present supply of coin in Russia. The paper money issued up to the close of 1885 amounted to about 907,000,000 rubles. On the other hand, 244,000,000 rubles in gold were held by the banks.

The balance sheet of the Bank of Russia for July 1, 1886, stated 716,433,349 rubles of credit notes to be in circulation, while the coin reserve was 171,472,495 rubles, of which 170,346,091 rubles were gold. In addition the bank held coin for safe keeping to the amount of 13,598,729 rubles. The premium on the paper is subject to great fluctuations, but experience has shown that it does not depend upon changes in the total amount of paper issued.

We have received the following estimate of the coin in circulation in Finland at the close of 1885:

		Finland marks.
Gold coins:		
In the bank	about..	17,250,000
In circulation	do....	4,750,000
Silver coins:		
In the bank	do....	5,500,000
In circulation	do....	6,500,000
Copper coins	do....	900,000

United States.—We have already stated, in the first division of the present part, the supply of coin in the Treasury and in the banks. It remains only to give the sums which are in the hands of the public at large, and, by adding them to the quantity in the Treasury and in the banks, to ascertain the total amount of money in use in that important country.

It was estimated that there were in the hands of the public:

	January 1, 1879.	November 1, 1882.	November 1, 1883.	November 1, 1884.	November 1, 1885.
Gold	$119,629,771	$286,900,965	$308,791,137	$307,820,918	$251,476,288
Silver	67,693,895	77,332,723	84,768,767	90,722,903	107,914,611
Notes	459,097,051	548,828,288	523,124,121	492,735,832	470,401,878
Total	646,420,717	913,061,976	916,684,025	891,285,653	829,792,777

Add the amounts in the Treasury and banks, and we get as the total supply and circulation of money:

	January 1, 1879.	November 1, 1882.	November 1, 1883.	November 1, 1884.	November 1, 1885.
Gold	$278,310,126	$547,356,262	$581,970,254	$585,611,872	$586,727,787
Silver	106,573,803	208,744,424	242,701,932	275,735,439	307,658,827
Notes	670,472,690	709,408,763	698,694,803	680,240,829	662,528,184
Total	6,055,356,619	1,465,509,449	1,523,366,989	1,541,588,140	1,556,914,798

As this table shows, the supply of precious metals in the United States has increased in the space of not quite seven years, from the 1st of January, 1879, to the 1st of November, 1885, by $308,418,000 of gold and by $201,085,000 of silver.

Attempts have occasionally been made to get statements of the money in circulation in countries other than those mentioned above. But we present none of them, considering them too uncertain. We content ourselves with presenting a collective statement. Some such statement has to be made, if we wish to get an expression in figures on the general condition of the medium of exchange and the probable future of the gold and silver standards. It is perfectly true that no statistics are better than false statistics; but we have here to deal, not with false statistics, but with estimates and compilations by which, though with wide limits of error, we try to get near the truth, and which are no more open to the charge of overstatement than to that of understatement. What we said before as to the estimates of the production of the precious metals, holds good for these estimates also. If good reasons are presented for thinking the balance of probability to be different, those who prepared the tables are more than willing to undertake a modification. Nothing lies further from their intention than to uphold preconceived or prejudiced estimates.

We have said that we will give a collective estimate for all the countries not especially mentioned above. This proceeding has the advantage that too high an estimate for one of these countries is likely to be offset by too low an estimate in another; and that we dispense with much empty guess-work. In any case these supplementary amounts are insignificant in comparison with the totals arrived at.

We therefore conclude the present part with a statement giving the probable monetary supply of the precious metals in civilized countries at the close of the year 1885. The legal-tender and subsidiary silver are treated as one. But the value of the silver coins we reckon on a plan different from that followed elsewhere in this work. We calculate, not their intrinsic value, but that assigned to them by law, that is, the value which is given in the bank statements, and which obtains in ordinary circulation.

Estimate of the total monetary supply of the precious metals at the close of 1885.

Countries.	Gold.		Silver.		Gold and silver.	
	Marks.	*Per cent.*	*Marks.*	*Per cent.*	*Marks.*	*Per cent.*
Great Britain	2,220,000,000	16.61	432,000,000	5.51	2,652,000,000	12.50
British colonies (without India)	680,000,000	5.09	66,000,000	0.84	746,000,000	3.52
Netherlands	80,000,000	0.60	269,000,000	3.43	349,000,000	1.65
France, Italy, Belgium, and Switzerland	4,195,000,000	31.39	3,200,000,000	40.80	7,395,000,000	34.87
Austro-Hungary	160,000,000	1.20	370,000,000	4.72	530,000,000	2.50
Germany	1,744,000,000	13.05	892,000,000	11.37	2,636,000,000	12.43
Scandinavian countries	115,000,000	0.86	42,000,000	0.54	157,000,000	0.74
Russia	770,000,000	5.76	280,000,000	3.57	1,050,000,000	4.95
United States	2,464,000,000	18.44	1,292,000,000	16.47	3,756,000,000	17.71
Other countries in Europe and America	936,000,000	7.00	1,000,000,000	12.75	1,936,000,000	9.13
Total	13,364,000,000	100.00	7,843,000,000	100.00	21,207,000,000	100.00

PART VI.

THE RATES OF DISCOUNT AND OF EXCHANGE.

THE RATES OF DISCOUNT AND OF EXCHANGE.

As our materials are meant mainly for the use of men of business, a detailed discussion of the nature of the rate of discount and the rate of exchange, and of the meaning of their fluctuations, may be dispensed with. The tables themselves give sufficient information.

1. Discount.

The rate of discount at important points from 1851 *to* 1885.

Year.	Bank of England.			Bank of France.			Bank of Germany (or Prussian Bank).			Open rate at Hamburg.			Vienna (bills at).		
	Lowest.	Highest.	Average.*	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.
1851 ..	3	3	3.00	4	4	4.00	4	4	4.00	1¼	5	2.75	4	4	4.00
1852 ..	2	2½	2.08	3	4	3.17	4	4	4.00	2¼	6	3.25	4	4	4.00
1853 ..	2¾	5	3.50	3	4	3.23	4	5	4.25	1¾	6	3.50	4	4	4.00
1854 ..	5	5½	5.12	4	5	4.30	4	5	4.36	1¾	4¼	2.50	4	4	4.00
1855 ..	3½	6	4.75	4	6	4.44	4	4½	4.10	1¾	6¾	3.75	4	4	4.00
1856 .	4½	6¾	5.75	5	6	5.51	4	6	4.94	4½	9	6.25	4	5	4.27
1857 ..	5½	9¾	6.75	5	9	6.15	5	7½	5.76	3¾	10	6.50	5	5	5.00
1858 ..	2½	5	3.25	3	5	3.70	4	6½	4.29	1	2½	1.75	5	5	5.00
1859 ..	3½	4	2.75	3	4	3.45	4	5	4.20	1¼	5	2.00	5	5	5.00
1860 ..	2¾	5	4.25	3½	4½	3.63	4	4	4.00	1	3	1.75	5	5½	5.13
1861 ..	3	7½	5.25	4½	7	5.52	4	4	4.00	1¾	4¼	2.56	5½	5½	5.50
1862 ..	2	3	2.50	3½	5	3.77	4	4	4.00	1¾	4½	3.00	5	5½	5.06
1863 ..	3½	7½	4.50	3½	7	4.64	4	4½	4.08	2	5¾	3.19	5	5	5.01
1864 ..	6	9	7.50	4½	8	6.50	4½	7	5.31	2¾	6¾	4.19	5	5	5.00
1865 ..	3¼	7	4.75	3	5	3.72	4	7	4.96	1¾	7	3.56	5	5	5.00
1866 ..	3¾	10	7.00	3	5	3.67	4	9	6.21	3	8½	4.69	4	5	4.94
1867 ..	2	3½	2.50	2½	3	2.71	4	4	4.00	1¼	4	2.12	4	4	4.00
1868 ..	2	3	2.25	2½	2½	2.50	4	4	4.00	1½	3¾	2.12	4	4	4.00
1869 ..	2½	4½	3.25	2½	2½	2.50	4	5	4.24	2½	4¾	3.87	4	5	4.34
1870 ..	2½	5	3.12	2½	6	3.99	4	8	4.90	2½	8	3.56	5	6	5.43
1871 ..	2	4½	2.87	5	6	5.71	4	5	4.16	2¼	4½	3.06	5	6½	5.49
1872 ..	3	6⅝	4.12	5	6	5.15	4	5	4.29	2½	5½	3.44	5	6	5.66
1873 ..	3¼	8⅛	4.75	5	7	5.15	4	7	4.95	3	7	4.80	5	6	5.22
1874 ..	2¾	6	3.75	4	4½	4.30	4	6	4.38	2¾	5	3.53	4½	5	4.87
1875 ..	2	4½	3.25	4	4	4.00	4	6	4.71	2¾	5¾	4.03	4½	5	4.58
1876 ..	2	4⅝	2.62	3	4	3.40	3½	6	4.16	2	5½	3.25	4½	5	4.54
1877 ..	2	4⅞	2.87	2	3	2.28	4	5½	4.42	2¼	5	3.47	4½	4½	4.50
1878 ..	2	5⅝	3.75	2	3	2.18	4	5	4.34	2½	4¾	3.49	4½	4½	4.50
1879 ..	2	4⅛	2.37	2	3	2.58	3	4½	3.70	1¾	4½	2.83	4	4½	4.17
1880 ..	2½	3	2.75	2½	3½	2.81	4	5½	4.24	1¼	5¼	3.18	4	4	4.00
1881 ..	2½	5	3.50	3½	5	3.84	4	5½	4.42	2½	5½	3.81	4	4	4.00
1882 ..	3	5 13/16	4.12	3½	5	3.80	4	6	4.54	2½	5	3.98	4	5	4.20
1883 ..	3	4¾	3.56	3	3½	3.07	4	5	4.05	2½	5	3.22	4	5	4.11
1884 ..	2	5	2.95	3	3	3.00	4	4	4.00	2	4¼	2.97	4	4	4.00
1885 ..	2	5	3.00	3	3	3.00	4	5	4.12	2	4¼	2.88	4	4	4.00

*In this and the corresponding columns the average is for the year.

Average rate for periods of several years since 1851.

Periods.	Bank of England.	Bank of France.	Bank of Germany (or Prussian Bank).	Open rate at Hamburg.	Vienna.
1851–'60	4.12	4.16	4.39	3.40	4.44
1861–'65	4.90	4.83	4.47	3.30	5.11
1866–'70	3.62	3.07	4.67	3.27	4.54
1871–'75	3.75	4.86	4.50	3.77	5.16
1876–'80	2.87	2.65	4.17	3.24	4.34
1881–'85	3.43	3.34	4.23	3.37	4.06

The highest and lowest rates of discount in the thirty-five years, from 1851 to 1885, were as follows:

	Highest.	Lowest.
	Per cent.	*Per cent.*
For the Bank of England	10	2
For the Bank of France	9	2
For the Bank of Prussia (or of Germany)	9	3
Private rates at Hamburg	10	1
Private rates at Vienna	6½	4

In Paris, London, and Berlin the rate of discount at other banks and with private firms was generally somewhat lower.

As regards the number of changes which the rate of discount underwent in each year from 1851 to 1885 in London, Paris, Berlin, and Vienna, the following table gives information:

Year.	Bank of England.	Bank of France.	Bank of Prussia.	Vienna.	Year.	Bank of England.	Bank of France.	Bank of Germany (or of Prussia).	Vienna.
1851	None.	None.	None.	None.	1869	7	None.	1	1
1852	2	1	None.	None.	1870	10	4	5	1
1853	6	1	1	None.	1871	10	2	1	4
1854	2	2	1	None.	1872	14	1	1	2
1855	7	2	1	None.	1873	24	4	6	1
1856	8	2	4	1	1874	13	1	4	1
1857	9	8	7	None.	1875	12	None.	5	1
1858	6	4	5	None.	1876	5	1	6	1
1859	5	2	2	None.	1877	7	1	7	None.
1860	11	1	None.	1	1878	10	1	3	None.
1861	11	7	None.	None.	1879	5	2	6	1
1862	5	4	None.	1	1880	2	2	5	None.
1863	12	8	2	None.	1881	6	2	3	None.
1864	15	11	5	None.	1882	6	3	5	1
1865	16	6	5	None.	1883	6	1	1	2
1866	14	7	10	1	1884	7	None.	None.	None.
1867	3	1	None.	None.	1885	7	None.	3	None.
1868	2	None.	None.	None.					

Finally, we present a comparative statement of the monthly rate of discount at several important points for the two years 1869 and 1885. The figures are taken from the well-known annual Commercial History and Review of the London Economist:

Months.	London.		Paris.		Vienna.		Berlin.		Frankfort.	
	Bank.	Private.	Bank.	Private.	Bank.	Private.	Bank.	Private.	Bank.	Private.
1869.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
January	3	2⅞	2½	1½	4	4	4	2½	2½	1¾
February	3	2¾	2½	1½	4	4	4	2½	2½	1¾
March	3	3	2½	1½	4	4	4	2½	2½	1¾
April	4	3⅞	2½	1½	4	4	4	2½	2½	1¾
May	4	3⅝	2½	1½	4	4	4	2½	2½	1¾
June	4½	4¼	2½	2	4	4	4	2½	2½	1¾
July	3½	3¾	2½	2¼	4	4	4	4	3	3
August	3	2½	2½	2	4	4	4	3	3	3
September	2½	2⅛	2½	2¼	5	5	4	3	3	3
October	2½	2⅜	2½	2⅜	5	7	4	4	3	3
November	3	3	2½	2¼	5	6	5	4½	4	4
December	3	2⅞	2½	2¼	5	5	5	4¼	4	3½
Average	3.12	3.00	2.50	2.25	4.37	4.50	4.25	3.25	3.00	2.50
1885.										
January	5	4⅛	3	2¾	4	4	4	3⅞	4	3¾
February	4	3⅜	3	2¾	4	3⅛	4	3⅛	4	3¼
March	4	3⅛	3	2¾	4	3⅛	4	3⅛	4	2⅜
April	3½	2¾	3	2⅞	4	3⅝	5	3¼	5	3⅛
May	3½	2⅝	3	2⅝	4	3¾	4½	4	4½	4
June	2	1	3	2¼	4	3¼	4	2¼	4	2⅜
July	2	¾	3	2⅛	4	3⅜	4	2⅞	4	3
August	2	1	3	2⅝	4	2¾	4	2⅛	4	2⅛
September	2	1⅛	3	2	4	3⅛	4	2¼	4	2⅛
October	2	1⅜	3	2	4	3½	4	3⅛	4	3¼
November	2	1⅞	3	2⅛	4	3⅛	4	2¾	4	2¾
December	3	2¼	3	2⅜	4	3¼	4	2⅝	4	2⅝
Average	2.84	2.04	3.00	2.46	4.00	3.48	4.13	2.91	4.13	2.98

Months.	Amsterdam.		Brussels.		Hamburg.		St. Petersburg.	
	Bank.	Private.	Bank.	Private.	Bank.	Private.	Bank.	Private.
1869.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
January	2½	2½	2½	2½	....	1¾	7	6½
February	2½	2½	2½	2½	....	1¾	7	6½
March	2½	2½	2½	2½	....	1¾	7	6½
April	2½	2½	2½	2½	....	1¾	7	6½
May	3	2½	2½	2½	....	1¾	7	6½
June	3½	3½	2½	2½	....	4½	7	7
July	3½	3½	2½	2½	....	4	6	6
August	3½	3½	2½	2¼	....	2½	6	5
September	3½	3½	2½	2¼	....	4	5	4½
October	4	3¾	2½	2¼	....	4	5½	6½
November	5	5	2½	2½	....	4	6	6
December	5	5	2½	2½	....	3½	6½	7
Average	3.50	3.50	2.50	2.50	....	2.75	6.37	6.12
1885.								
January	3	2⅝	4	3⅝	4	3⅞	6	6
February	3	2½	4	3¼	4	3	6	6
March	3	2⅝	3	2¾	4	2⅜	6	6
April	3	3	3	2⅝	5	3⅝	6	6
May	3	2¾	3	2⅞	4½	3¼	6	6
June	2½	2¼	3	2½	4	2¼	6	6
July	2½	2⅛	3	2½	4	2¾	6	6
August	2½	2	3	2¾	4	2½	6	6
September	2½	2	3	2¾	4	2⅛	6	6
October	2½	2¼	3	2¾	4	3	6	6
November	2½	2¼	3	2⅞	4	2⅝	6	6
December	2½	2¼	4	3½	4	2½	6	6
Average	2.71	2.39	3.26	2.90	4.13	2.82	6.00	6.00

2. EXCHANGE.

Rate of exchange on London, 1851–'85

Years.	At Berlin, three months.*			At Paris, three months. Francs per pound.†			At St. Petersburg, three months. Pence per ruble.		
	Highest.	Lowest.	Average.	Highest.	Lowest.	Average.	Highest.	Lowest.	Average.
1851	6. 23	6. 19¼	6. 20¼	25. 25	24. 77½	24. 90¼	38 11/16	37½	37. 90
1852	6. 25¼	6. 20¾	6. 23⅝	25. 32½	24. 90	25. 15¾	39 7/16	37 11/16	38. 29
1853	6. 22¼	6. 16½	6. 19⅞	24. 90	24. 70	24. 79¾	39⅜	38	38. 68
1854	6. 17	6. 13¼	6. 15¼	24. 82½	24. 62½	24. 71⅝	38 1/16	33½	36. 37
1855	6. 20	6. 14⅝	6. 17⅝	24. 92½	24. 77½	24. 84⅞	36⅝	35 3/16	36. 07
1856	6. 22¾	6. 16½	6. 20⅝	25. 02½	24. 80	24. 91⅝	39 5/16	37 3/16	38. 23
1857	6. 19⅜	6. 17⅝	6. 18⅜	24. 87½	24. 70	24. 80⅝	38 3/16	34½	37. 24
1858	6. 21	6. 18¼	6. 19¾	25. 00	24. 82½	24. 90¼	36 13/16	35½	35. 98
1859	6. 21	6. 14	6. 17⅝	24. 95	24. 92½	24. 93¼	36 15/16	33 1/16	35. 24
1860	6. 18	6. 17½	6. 17½	25. 07½	24. 82½	24. 88⅜	36¼	34 15/16	35. 68
1861	6. 21½	6. 18¼	6. 20	25. 17	24. 85	25. 00⅝	35	33⅞	34. 27
1862	6. 22¼	6. 20½	6. 21¼	25. 12½	24, 92¼	25. 03⅛	35 11/16	33 5/16	34. 68
1863	6. 21¼	6. 18¼	6. 20¼	25. 20	24. 85	24. 97¾	37 15/16	35	36. 61
1864	6. 21⅛	6. 18¼	6. 20⅛	24. 92½	24. 67½	24. 79⅞	34¾	30 3/16	32. 55
1865	6. 24½	6. 20⅞	6. 22⅜	24. 97½	24. 77½	24. 89⅝	31 13/16	31⅛	31. 43
1866	6. 22⅞	6. 17½	6. 21	25. 16	24. 70	24. 88⅞	32⅛	25 15/16	29. 73
1867	6. 24¼	6. 20⅞	6. 23¼	25. 21½	25. 14	25. 16¾	33⅛	31⅛	32. 51
1868	6. 24⅝	6. 22⅞	6. 23¼	25. 21	25. 14	25. 16⅛	33 3/16	32 9/16	32. 89
1869	6. 24⅞	6. 23	6. 23¾	25. 28	25. 12½	25. 16⅜	32 9/16	29⅛	30. 58
1870	6. 24¼	6. 19	6. 22¾	25. 20	25. 12	25. 18⅛	31	28⅝	29. 73
1871	6. 23¾	6. 19¼	6. 21½	26. 10	25. 25	25. 65¾	32 15/16	31	32. 00
1872	6. 21⅞	6. 20	6. 21¼	25. 67½	25. 22	25. 46¼	33	32 5/16	32. 73
1873	6. 21⅛	6. 19	6. 20⅛	25 51	25. 27½	25. 64¾	32 11/16	32⅛	32. 45
1874	6. 23 7/10	6. 21⅜	6. 22⅜	25. 23	25. 13	25. 17⅝	33⅝	32 13/32	33. 25
1875	20. 46	20. 15	20. 30¼	25. 26	25. 08½	25. 15¼	33⅜	31 17/32	32. 73
1876	20. 42	20. 21	20. 35½	25. 24	25. 08½	25. 16	31⅛	28 29/32	30. 90
1877	20. 45½	20. 25½	20. 35⅛	25. 19	25. 06½	25. 11⅞	29⅞	23 5/16	25. 96
1878	20. 31½	20. 24	20. 27½	25. 29	25. 08½	25. 16⅞	26⅝	22 9/16	24. 40
1879	20. 40	20. 22½	20. 32¾	25. 30	25. 12½	25. 21⅜	25⅛	23⅛	24. 30
1880	20. 39½	20. 26	20. 31½	25. 35	25. 12½	25. 25¼	25 19/32	24 5/32	25. 03
1881	20. 38	20. 16	20. 29⅜	25. 31½	25. 14½	25. 24⅜	26	24 9/32	25. 19
1882	20. 32½	20. 15½	20. 25¼	25. 27½	25. 12	25. 20⅜	24 9/16	23 11/16	24. 16
1883	20. 32½	20. 25½	20. 29¼	25. 32	25. 17½	25. 24	24 3/16	23⅜	23. 66
1884	20. 42	20. 22	20. 31⅞	25. 32½	25. 14½	25. 21¼	25 1/32	23 5/16	24. 31
1885	20. 34½	20. 22	20. 29¼	25. 38½	25. 23½	25. 28¾	25 5/32	23 17/32	24. 16

* *Berlin.*—Until 1874 (inclusive) the figures mean so many thalers and silver groschen per pound sterling; after 1875 they mean marks per pound.

† *Paris.*—Since the year 1867 quotations are for sight-bills. From September, 1870, to May, 1871, no rates were published, in consequence of the Franco-German war.

Rate of exchange on London, 1851–'85—Continued.

Years.	At Vienna, three months. Florins per pound or 10 pounds.*			At New York, sixty days' sight.†		
	Highest.	Lowest.	Average.	Highest.	Lowest.	Average.
1851	13.40	11.32	12.14	....	....	....
1852	12.29	10.45	11.63	....	....	....
1853	11.19	10.38	10.63	....	....	....
1854	14.00	11.12	12.31	....	....	....
1855	12.28	10.51	11.62	....	....	....
1856	10.26	10.02	10.10	....	....	....
1857	10.34	10.07	10.13	....	....	....
1858	10.22	9.51	10.05	....	....	....
1859	143.00	104.10	122.29	....	....	....
1860	144.00	126.00	132.50	110	104⅛	108.59
1861	153.40	137.35	141.78	110¾	106	107.58
1862	138.80	114.80	128.28	147	111¾	125 56
1863	120.75	110.60	113.50	187	140	160.29
1864	120.70	113.60	115.99	273	172	223.25
1865	113.65	103.80	109.00	225	151⅛	167.85
1866	130.70	101.70	120.33	166	130	151.82
1867	121.70	120.30	125.98	110⅛	108	109.37
1868	119.70	113.60	116.50	110¼	108⅝	109.67
1869	126.90	121.10	123.75	110⅛	107¾	109 01
1870	124.50	119.90	124.04	109⅞	108¼	109.22
1871	125.10	115 90	121.42	110⅝	108⅛	109.44
1872	113.80	106.90	110.53	110	108⅜	109.10
1873	113.85	109.00	111.05	109⅛	106¼	108.13
1874	112.75	109.25	111.01	4.88¼	4.84	4.85¾
1875	113.80	111.00	111.82	4.88	4.79	4.84⅝
1876	127.45	114.30	121.35	4.88⅛	4.82	4.85⅞
1877	128.90	117.20	122.25	4.88	4.81	4.84⅛
1878	122.80	114.70	117.89	4.87	4.80⅛	4.83⅛
1879	117.70	115.85	116.63	4.87¾	4.80	4.83⅞
1880	119.15	117.20	117.84	4 86	4.78½	4.82⅛
1881	118.80	116.90	117.90	4.83½	4.76	4.80⅝
1882	120.35	118.50	119.63	4.86¼	4.79½	4.83⅝
1883	121.10	119.65	120.07	4.84¾	4.81	4.82⅞
1884	123.30	121.30	121.98	4.87¾	4.80	4.83¼
1885	126.75	123.70	125.01	4.86⅛	4.83	4.84⅛

* *Vienna.*—Since the year 1859 the rate of exchange is quoted at so much per 10 pounds sterling. After 1881 the quotations are for sight-bills.

† *New York.*—Up to the close of 1873 the rate of exchange in New York on London was quoted with a premium based on the assumption that 4½ shillings were equivalent to $1, that is, that 444 cents were equivalent to a sovereign. An act of Congress of March 3, 1873, abolished this obsolete valuation of sterling exchange, and it came to an end on January 2, 1874. Contracts based on it are null and void. In consequence, the rate of exchange on London is now calculated directly at so many dollars for the pound sterling, the basis being an assumption that the pound sterling equals $4½ [*sic* in the original]. When specie payments were suspended, at the beginning of the civil war in 1861, paper depreciated and a premium set in which reached 5 per cent. in January, 1862, amounted to between 1½ and 2½ per cent. in March, 1862, then rose suddenly, until in July, 1864, it reached its maximum of 185 per cent. Since the close of 1878 paper has been at par with gold.

There is no subject in statistics which admits of so exact treatment as the rate of exchange. The balance of payments in a country is indicated beyond doubt by the rates of exchange. If a country has larger payments to make abroad than it has to receive (taking into account all payments due at the time, so that it is necessary to consider not the excess of imports alone, the payments of interests alone, or any single obligation,) then the equilibrium must be established by a remittance of coin. But a remittance of coin will take place only if bills on foreign countries are dear. In consequence of the arbitrage transactions the various rates of exchange of any one place form a whole, and move together. It is unfortunate that these transactions, whose influence upon the international movement of money, and thereby upon the general commercial interests of the countries concerned, is so important and beneficial, are often misunderstood, and are fettered by taxes which are the result of a misconception of their nature and effect.

In former times the possible variation in the rate of exchange (speaking, of course, only of countries having a fixed gold standard) was much greater than it is now. At present the expense and the loss of time in making remittances of gold are reduced to a minimum. The gold point—that is to say, the point at which gold is likely to be shipped—is as follows for the important rates of exchange:

	Par.	Outflow of gold.	Inflow of gold.
Rate in—			
Berlin on London .... marks..	20.43	20.33	20.52
Paris on London .... francs..	25.225	25.125	25.325
Amsterdam on London .... florins..	12.11	12.02	12.17
New York on London .... dollars..	4.867	4.827	4.90
Paris on Berlin .... marks..	81.00	80.56	81.37

This table refers, of course, only to the rates on sight bills or bills falling due at very short dates. For other bills the date for which they are drawn and the rate of discount in the place on which they are drawn must of course be taken into account.

The average rates of exchange given in our tables have been calculated by taking the quotations at the end of each month in the year, and ascertaining from them the average of the year.

PART VII.

VARIATIONS IN GENERAL PRICES AND IN THE PURCHASING POWER OF GOLD.

VARIATIONS IN GENERAL PRICES AND IN THE PURCHASING POWER OF GOLD.

In order to judge of the present and future demand for money, and to solve the general problem of prices and of money, it must be remembered above all things that in modern times a great change has taken place in conditions of essential importance for that problem. The development of credit and of banking has revolutionized the conditions on which the use of money depends, as much as the development of railways and of steamships, the Suez Canal, and the telegraph, have revolutionized the business of transportation. Comparisons with the monetary experiences of former times still have an interest and a lesson for us; but they are apt to lead to wrong conclusions, because the conditions of the present time have become so entirely different. In ancient times and in the Middle Ages the actual supply of the precious metals was the most important factor in making prices, that is, the value of commodities in general expressed in money. Where barter took place money prices were not affected, and credit transactions played no important part. When the mines of Laurion caused considerable sums of money to flow into the channels of trade, prices in Greece rose at once. In Rome the influx of gold and silver from the treasures of the provinces caused a considerable rise in general prices. On the other hand, in the time of Charles the Great, and for a considerable period before and after his time, we find surprisingly low prices, obviously the result of the scarcity of the precious metals in the channels of trade. Differences of opinion may exist as to how great the rise was in the prices of all commodities at the close of the sixteenth century and first half of the seventeenth; but it is certain that the cause of so great and permanent a rise in prices is to be sought in the extraordinary increase in the production of the precious metals which took place at that time. As this increase of production went on, some economists of the eighteenth century thought that the flow of silver to the East was a blessing for Europe, since without it an unendurable rise in prices would have taken place.

In the period from 1815 until about 1840 Europe's supply of precious metals fell off, in consequence of the decrease in the gold production in Mexico and South America. Huskisson and W. Jacob, the English economist, believed that this was the chief cause of the depression of trade and the low prices of commodities during that time.

This opinion was then almost universally entertained; but before long doubts began to be expressed.

In a work published in 1843 by J. Helferich, entitled "The Periodic Changes in the Value of the Precious Metals from the Discovery of America to the Year 1830," it is said:

> At the beginning of the period between 1815 and 1830, when the stream of the precious metals had been suddenly interrupted, we find, notwithstanding the decrease in the circulating medium of Europe, about the same prices that ruled on the

> Continent at the time of the greatest accumulation of gold. * * * It seems to be a characteristic of modern trade that money, as a medium of exchange, tends more and more to lose its influence upon the prices of commodities. * * * Changes in the metallic medium of exchange, so far as they occur independently, and not merely in consequence of the state of trade, are of insignificant importance compared to the extraordinary variety of possible changes in the course of trade. At all events, they are not worth considering as compared to those great changes which credit is constantly able to bring about. It is the characteristic of credit that it is able to draw a line between the two functions of money, its function as a measure of value and its function as a medium of exchange. It creates a medium of exchange without touching the measure of value. It can make any commodity the medium of exchange, while metallic money remains the standard of value. * * * In earlier times, when there was no other medium of exchange than that which was also the measure of value, when insecurity of property and scanty development of trade prevented the use of credit, then changes in the only existing medium of exchange, a medium which stood by itself because no other commodity was in universal demand, necessarily exercised a great effect on prices. The situation is essentially different at the present time. * * * The greater the range of commercial transactions, the less is the influence exercised on the movement of prices by gold as the medium of exchange, and the more independent is the movement of prices.

Helferich's conclusion is that the prices of commodities are fixed only by causes inherent in themselves [*nach deren eigener Wertbestimmung*], and that gold is called cheap or dear according as the level of prices is high or low. Variations in the value of money are consequences of changes in the value of commodities, and not their cause.

At the beginning of the decade 1850–'60 the prices of a number of important articles rose considerably, at the time when the extraordinary production of gold in Australia and California took place. This was supposed to be the natural result of the remarkable increase in the medium of exchange, and it was considered needless to search for other causes.

When this general rise of prices ceased, after the speculative years 1872–'73, and when in many branches of trade a continuous fall in the prices of important commodities set in, the change was ascribed, in accordance with the *Quantitäts-Theorie*,* then generally entertained, to the cessation of the coinage of silver in all European states, and to the appreciable decrease in the production of gold, combined with the increased demand for gold. A very weighty statement to that effect was made by Mr. George Goschen, in his address at the Institute of Bankers, April 18, 1883, "On the Probable Results of an Increase in the Purchasing Power of Gold." Mr. Goschen pointed out that since 1871 Germany, the United States, Italy, and the Netherlands had absorbed, in consequence of their adoption of the gold standard, about £200,000,000 sterling of gold. This absorption had coincided with a considerable decrease in the production of gold, the production having fallen off £10,000,000 sterling per year. Mr. Goschen laid it down as an axiom, universally accepted, that the prices of commodities were affected by the quantity of the circulating medium, which, indeed, found its expression in prices. The extraordinary demand for gold must have brought about a general decline in prices. This reasoning was confirmed by the great fall in prices of important commodities which had taken place in 1883 as compared with 1873. Such a comparison showed a general fall, although exceptional circumstances had maintained the prices of a few articles. Mr. Goschen does not expressly state, yet he obviously believes, that the demonetization of silver in many countries, bringing about an extraordinary demand for gold, has been the real cause for the fall in prices. This belief is in harmony with his statements made at the International Monetary Conference in Paris, in 1878, to the effect that the continued demonetization of silver would bring about a financial and commercial catastrophe such as had never before been seen. The opinion of Mr. Goschen, that the appreciation of gold was the true cause of the general fall of prices, has been accepted in many quarters in England, and has been accepted still more generally by the champions of bimetallism on the Continent.

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* The theory that prices vary with changes in the quantity of money.

Mr. Giffen published in the Contemporary Review for June, 1885, an essay following the same train of thought (Trade Depression and Low Prices). We will give the essential points in Mr. Giffen's essay. As a proof of the extraordinary fall in prices he presents a comparative statement of the wholesale prices of sixteen important articles.

Prices of leading wholesale commodities in January, 1873, 1879, 1883, and 1885, *compared.*

Year.	Scotch pig-iron, per ton.	Coals, per ton.	Copper, Chili bars, per ton.	Straits tin, per ton.	Wheat, Gazette average, per quarter.	Wheat, red spring, at New York, per bushel.	Flour, town made, per sack.	Flour, New York price, per barrel.
	s. d.	*s. d.*			*s. d.*		*s. d.*	
1873	127 0	30 0	£91	£142	55 11	$1.70	47 6	$7.50
1879	43 0	19 0	57	61	39 7	1.10	37 0	3.70
1883	47 8	17 6	65	93	40 4	1.18	38 0	4.30
1885	41 9	18 0	48½	77½	34 11	.91	32 0	3.25

Year.	Beef, inferior, per 8 pounds.	Beef, prime small, per 8 pounds.	Cotton, middling upland, per pound.	Wool, per pack.	Sugar, Manila, muscav., per cwt.	Coffee, Ceylon, good red, per cwt.	Pepper, black Malabar, per pound.	Saltpeter, foreign, per cwt.
	s. d.	*s. d.*	*d.*		*s. d.*	*s. d.*	*d.*	*s. d.*
1873	3 10	5 3	10	£23	21 6	80 0	7	29 0
1879	2 10	4 9	5⅝	13	16 0	65 0	4¼	19 0
1883	4 4	6 0	5 11/16	12	16 6	78 6	5¾	19 0
1885	4 0	5 4	6	11	10 0	71 0	8	15 3

Mr. Giffen adds that for about fifteen years after 1845–'50 prices had tended to rise. From 1860 to 1873 they had, upon the whole, been stationary, fluctuating between certain maximum and minimum prices; after 1873 a distinct tendency towards a fall was noticeable, the oscillations being about the same as those occurring before 1850, while the general level was somewhat lower.

Two causes, he continues, have been assigned for the fall of prices since 1873. In the first place, the great increase in the quantity of commodities and the diminution in their cost of production, resulting from the progress of industry and of the means of transportation, from cheap freight rates, the telegraph, etc. In the second place, the comparative scarcity of gold, of which the production had fallen while the demand for it had risen. Mr. Giffen lays more stress upon the second cause. He believes it to be immaterial whether commodities increase in quantity or gold decreases (or fails to increase at the same rate as commodities increase). In either case the ratio between gold and commodities is changed. If the production of gold had increased and its cost of production had diminished to the same extent as in the case of commodities, the increased supply of commodities would have shown itself in a rise of money wages, of ground rents, and of business profits, but not in low prices of commodities. If the latter phenomenon has set in, it is an absolute proof that the ratio between gold and commodities has changed, and that the same increase in their quantity and the same diminution in their cost of production have not set in. Mr. Giffen points out, as Mr. Goschen had done, that the annual production of gold had averaged £30,000,000 sterling between 1852 and 1856, and in recent years has fallen to less than £19,000,000 sterling. On the other hand, Germany, the United States, Scandinavia, Holland, and Italy had absorbed for coinage about £200,000,000 sterling in the last thirteen years. Moreover, the money market had indicated a scarcity of gold. It has been said that a scarcity of gold in the last ten or twelve years would have shown itself in higher rates of discount and interest than those that had prevailed at the time of the abundance of gold, and, since no such higher rates were to be seen, that gold had not been scarce. But Mr. Giffen answers that for longer periods the rate of discount and of interest depends, not on the scarcity or abundance of gold, but on the scarcity or abundance of loanable capital. A scarcity or abundance of gold influences the money market by bringing about monetary difficulties, and times of temporary embarrassment and lack of credit. Such a state of things would either check the tendency to rising prices or increase the tendency to falling prices. The average rate of discount during the whole of such a period of sudden rises in the rate of discount might be lower than the average rate in times when such rises were less frequent. Nevertheless the mere existence of a series of such rises would suffice to exercise a depressing effect on prices. Now he points out that the history of the money market since 1871, when Germany began to procure gold from London, was full of sudden rises of this kind. They have happened in every year, except 1879 and 1880, and they are to be ascribed to the unusual demands for gold and to the difficulty of fulfilling those demands. These facts lead unavoidably to the conclusion that the general course of prices in modern times, so remarkably different from the course of prices after the Californian and Australian gold discoveries, was the result of the decreased production of gold and the increased demand for gold. It has been objected that the increase of banking facilities and other economies in the use of gold have offset its scarcity, but Mr. Giffen's answer is that in the period from 1850 to 1865, and in the subsequent period up to 1873, such economizing devices had been, in comparison to the transactions of those times, equally considerable. The rise in wages, in ground rents, in business profits, which took place during the earlier rise in prices, has ceased since 1873, a state of things resulting naturally from the scarcity of gold. But he says, in conclusion, that we are still too near these phenomena to have comprehensive information in regard to them.

Mr. Giffen has repeated his opinion that the decrease of the production of gold and the increase in the demand for it have been the causes of the decline in prices, and has cited further facts in support of it, in his essay entitled "Gold Supply, the Rate of Discount, and Prices" (Essays in Finance, 2d series, London, 1886). As might be expected, Giffen does not maintain the so-called *Quantitäts-Theorie* in the crude form in which it had been applied to a simple economic state where credit was little or not at all developed. He takes account of the complicated development of modern trade, with its extended banking and credit system. He repeats that the expedients for economizing the uses of gold have already reached a complete development. Other things remaining the same, the increase of population and of production will still call for a corresponding increase in the coin for ordinary transactions and for the reserves of banks, if a fall in the general level of prices is to be prevented. A scarcity of gold would show itself first in the reserves of the great banks and through them, indirectly but inevitably, in the rate of discount and in prices. He therefore believes that, unless an increase in the supply of money takes place, a further fall in prices is inevitable.

We have not space to give Mr. Giffen's discussions in detail, but it should be said that they take first rank among those maintaining the validity of the *Quantitäts-Theorie* in our present complicated system of industry.

The bimetallists of Germany, as a rule, accept with little qualification the conclusions of Messrs. Goschen and Giffen in regard to the effect of a scarcity of gold upon general prices. Sometimes this is done with qualifications. Dr. Arendt, in number 11 of the publications of the German Society for International Bimetallism, expresses himself as follows:

> It is as false to suppose that there is a mathematical agreement between the general state of prices and the amount of money in circulation as it is to deny entirely the connection between these two things. Slight fluctuations in the quantity of money will have no effect. Great fluctuations, on the other hand, for instance, a great increase in the quantity of paper money, will certainly have their effect on prices. But this factor is not an all-important one. In modern times most prices are governed, not by the industry of a single country, but by that of the world at large. Here it is, in our opinion, that the gold standard, whatever be our general theories, has undoubtedly been of practical effect in bringing about the fall in prices. Within any one country the development of credit has made it certain that the amount of money in circulation will accommodate itself to the demand. If the demand increases the quantity of uncovered notes increases, the bank reserve declines, the rate of discount rises, and a higher rate of discount attracts the precious metals from abroad. If, on the other hand, the amount of money in circulation exceeds the demand, coin accumulates in the banks, the rate of discount falls, and coin flows to places where it is more in demand. This healthy development of trade is checked nowadays only by the scarcity of gold, which causes every country to watch jealously its holding of gold, since no one knows whence gold, once lost, may be reobtained. In a sense, therefore, the amount of money in circulation depends on prices, and not prices on the amount of money. But this principle holds good only for a single country, not for the world at large, and it is in the world at large that general prices are fixed.
>
> It is not to be denied that the production of the precious metals has always exercised an extraordinary effect on general prices. This fact, hardly to be doubted, may have led to undue emphasis in stating the connection between the quantity of money and prices. For ourselves, we deduce an indirect *Quantitäts-Theorie.* A single country, by means of the rate of discount, regulates its circulation according to its needs. If an abundant supply of the precious metals sets in, a low rate of discount will prevail on all hands, and thereby a stimulus will be given to production; on the other hand, a scant supply of the precious metals will lead to an insufficiency in the circulating medium, and then the attempt must be made, as it is now made in England, to attract precious metals by means of high rates of discount. Other countries, which can afford to lose no precious metals, are affected by such action, so that the rise in the rate of discount becomes general, as is seen, for instance, in the rise in the rate of discount at our Imperial Bank. Such a state of things necessarily impedes production.
>
> The direct demand for commodities resulting from the newly-produced precious metals is a more important factor. The mine owner wants consumable commodities; he must have articles of food and comfort. The work [*verdienst*], which he supplies, acts on and on, and everywhere stimulates profitable labor.
>
> At the present time we have to deal with a phenomenon which can not be fitted exactly to the scientific rule, namely, the depreciation of one metal which had served as money. The depreciation of silver is, to our mind, an important cause of the fall of prices, and therefore the *Quantitäts-Theorie* does not give a final explanation. The adherents of the gold standard maintain that the restoration of the value of silver would mean a depreciation of gold by 20 per cent., and for that reason they are bitterly opposed to the double standard; but if this be true, the converse must also be true, and the depreciation of silver by 20 per cent. must have caused the value of gold to rise by 20 per cent. It is said that bimetallism will cause a depreciation of gold by 20 per cent,, that is, a rise in prices of 20 per cent. But then it must be ad-

mitted that the present prices have fallen by 20 per cent. in consequence of the gold standard. The fundamental difficulty of our time is found in the low range of prices. We can not be frightened, therefore, if a depreciation of gold, that is to say, a rise of prices and a return to normal industrial conditions, is prophesied as the lamentable consequence of bimetallism. We do not go so far as the adherents of the gold standard. We believe that the depreciation of silver has decreased prices, because silver-using countries (Eastern Asia, America) have had a diminished purchasing power, and have been able to buy European products only at lower prices or not at all. At the same time the increased demand for gold had prevented the weaker countries from maintaining their standards. The premium on gold rose everywhere, in Austria, Russia, Roumania, as much as in Brazil and the Argentine Republic. Consequently these countries were no more able to buy European products than the silver countries, or could buy only at lower prices. At the same time, the decline in the value of their medium of exchange enabled them to export at lower prices to the gold countries. Consequently a double pressure upon prices arose in these countries, such as necessarily arises from a decrease in demand combined with an increase in supply. The scientific bimetallists predicted precisely this state of things. They asserted that the gold standard must lead to a rise in the gold premium, and that such a rise has an effect exactly opposite to that of an import duty; it stimulates imports and checks exports. The bimetallists predicted that protective duties would first be resorted to as an offset to this state of things, but that it would soon appear that protective duties could not offset the increase in the gold premium. This conviction has spread more and more rapidly, and will eventually lead to the victory of the bimetallists. As the depreciated silver has been the direct cause of the fall of prices, so, as is obvious, without any theoretical arguments, the restoration of silver will lead to the return of normal prices. The silver-using countries will become profitable purchasers of European products, the premium on gold will decline in the countries that have a paper currency, the differences in the value of coin in different countries will diminish or disappear, the import of commodities into the gold countries at sacrifice prices will cease, demand will increase, supply will diminish, prices will rise.

A recent publication, entitled "The Silver Question and its Social Aspects: an Inquiry into the Existing Depression of Trade and Present Position of the Bimetallic Controversy," by Hermann Schmidt (London, 1886), maintains most emphatically the view that the low range of prices and the depression of trade are to be ascribed to the appreciation of gold, which again is due to the depreciation of silver. The causes which the opponents of this view have brought forward, such as the cheapening of commodities, the great increase in their quantity, the improvements in transportation and in the arts generally—all these had been in effect before 1879, without then causing any general and permanent fall of prices. Such a fall had set in only with the depreciation of silver that resulted from mistakes in the coinage policy of various countries. It is not true, says this writer, that the facilities in the use of money through banking and credit give a sufficient substitute for the diminished supply of metallic money, nor do they serve to render the scarcity of gold a mere scarecrow. These substitutes have been in use in earlier years, and can not be employed without a sufficient basis of coin. If substitutes for coin do not come into increasing use, as trade and demand increase—if, on the contrary, the demonetization of silver and the decline in the monetary gold supplies check their use—then the stimulus to the easy action of money by the use of credit must also be checked, and prices will fall even lower. A remedy can be found only in international bimetallism.

The view that the scarcity of gold and the depreciation of silver are the true causes of the continued fall in prices and the depression of trade is met, on the other hand, with the assertion that these events, in so far as they really have taken place, stand in no connection with the silver question, but may be explained easily and sufficiently in other ways.

Mr. Hansard, in an address presented on December 17, 1884, to the Institute of Bankers, entitled "On the Prices of some Commodities during the Decade 1874–'83," has endeavored to show that the cause of the fall in prices lies not in a scarcity of gold, but in an overproduction of commodities. He maintains the same view in his testimony presented on May 31, 1886, to the British commission for investigating the causes of the depression of trade. He believes that no real scarcity of gold has been felt in England, as is proved by the low average rate of discount which the Bank of England has maintained for the last ten years. Moreover, a rise in the purchasing power of gold and a fall in general prices are one and the same thing, and therefore one of them can not be the cause or the consequence of the other. Mr. Hansard has shown in detail the remarkable increase in the production and stock on hand of twenty-five important articles, and presents the following comparative statement, in percents, of prices and stocks:

At the close of—	Stocks.	Prices.	At the close of—	Stocks.	Prices.
1874	2500	2500	1879	3169	2460
1875	2545	2360	1880	3333	2194
1876	2824	2504	1881	3361	2232
1877	3351	2248	1882	3363	2119
1878	3448	2140	1883	3310	2111

Twenty-one of these articles show a fall in price, and in part a considerable fall, in 1883 as compared to 1874, namely: Sugar, tea, coffee, rice, indigo, ginger, wool, cotton, jute, cochineal, soda, saltpeter, hides, tallow, timber, iron, copper, tin, wheat, coal. Four articles do not participate in the general fall, cocoa, paper, silk, and meat, but the rise in their prices is very slight.

The need of gold for effecting payments is constantly lessening, according to Mr. Hansard. The use of credit in the form of checks is constantly increasing. The transactions through the clearing-house, in which not a single gold piece is used, show a steady increase. The annual transactions of the London clearing-house were, in the years 1871–'75, £23,613,000,000 sterling, while in the years 1881–'85 they were £29,816,000,000. The use of checks by people of small means is extending; the growth of banks and of branch banks throughout the country causes a class of customers to arise who formerly used nothing but gold or bank-notes for their daily payments, and now use checks to a large extent. If an increase in bank facilities had not taken place side by side with the great growth of imports and exports, prices would have fallen still lower. The postal savings banks, whose deposits have risen gradually to £45,000,000 sterling as against £15,000,000 in 1870, have attracted gold coins from the pockets and hoards of people of small means, and have promoted a quicker circulation of coin. The sovereign is becoming a standard of value rather than a coin. Mr. Hansard finds the chief cause of the fall in prices and the depression of trade in overproduction and excessive supply. Overproduction is the result of the increased use of steam in manufactures and in transportation. The development of the railroad system of India, of the United States, of South America, the improvement and cheapening of transportation by sea, the saving of time by the Suez Canal, all these have brought new supplies of many important articles. The development of the joint-stock principle has aided in stimulating production, even though dividends have been low. The growing use of the telegraph has tended to increase the effective supply of commodities. In the distribution of goods, smaller stocks are required, since orders can now be filled in incredibly short time, yet stocks have accumulated in large amounts, Prof. E. Nasse, in a discussion of the silver question, published in the Preussische Jahrbücher for March, 1885, has also touched on the alleged effect of the scarcity of gold, and has expressed his views, in essentials, as follows:

A general fall of prices as compared with the times that preceded the speculative period 1871–'74, has not been shown to exist. The fall has been clearly proved only for the more important commodities of wholesale trade, especially for raw materials and articles half manufactured. No fall has been proved in the wages of ordinary or skilled labor, in retail prices, and especially not in finished commodities.

For such change as has taken place a much simpler explanation than a scarcity of gold is to be found. A great diminution has occurred in recent times in the cost of production of a number of commodities, and especially of those commodities which are generally selected in order to ascertain changes in the value of money. The opening of new and fertile regions in almost all quarters of the globe, and the rapid extension of the arts of civilization, has rendered it possible to produce with less labor and capital almost all agricultural products and many mineral products. Improvements in the means of transportation have enabled these articles to be brought more cheaply to European markets. * * * In addition to this improvement in the production, and fall in the price, of the most important raw materials, the manufacturing arts are also constantly advancing, and cheaper and better methods of production are being discovered. Striking examples are to be seen in the production of steel, of sugar, of important dye-stuffs, and in the great saving of expense by the growth of large establishments and of production on a great scale. Lastly, the cost of transportation, which forms so important a part of the cost of many commodities, has undergone an extraordinary change. * * * Such a decrease in the amount of labor and capital needed for production must have an effect on money prices, if money possesses the qualities of a good measure of value. If the causes directly affecting the value of money undergo no change, a widespread fall of prices must set in. Only if there had been a tendency toward cheaper money as powerful as that for cheaper commodities, would it have been possible that commodities should retain their former prices. * * * Still another consideration makes it improbable that the fall in prices is to be explained from a scarcity of money. A scarcity of money in the present condition of banking in Germany, England, and other countries will first make itself felt in a demand for gold at their banks. Firms or persons who need the means of making payments get their supplies from the smaller or larger banks with whom they deal, and deposit any surplus in those banks. * * * The banks, however, are directly or indirectly connected with the great central banks, which alone are able to increase the medium of exchange, by increasing their note circulation or diminishing their holdings of coin. They also absorb any surplus in the medium of exchange, when notes are paid, loans on collaterals are paid, or deposits are received. * * * Every demand for money is soon translated into a demand for loans at the Imperial Bank. The bank raises or lowers its rate of discount as the demand is large or small, and a scarcity of money must therefore show itself in high rates of discount; but no such effect can be traced in recent years. * * * In most civilized countries a very small proportion of transactions is carried on with full-weight coin. Larger payments are effected by bank-notes or by bank balances and clearing-houses, while small payments are effected by credit coins. The practice of effecting payments by the transfer of credit, or by offsetting debts, is susceptible, without any increase in the coin supply, of great extension; and a comparatively small growth of this practice serves to offset a considerable decrease in the production of gold. Credit has a steady tendency to counteract an excess or a deficiency of gold, and a lack of means of payment does not easily occur so long as credit is not shaken. * * * No proof has yet been adduced that a scarcity of gold has caused any change in the value of money in countries having the gold standard. All the facts referred to in proof of such an assertion are susceptible of a different explanation.

A report published in the Mitteilungen des Vereins z. W. d. w. I. in Rheinland und Westfalen, for June, 1885, also maintains that the scarcity of gold is not the cause of the fall of prices, but that this fall, in so far as it must be admitted to have occurred, is the result of independent causes. It is said:

We see that, in the main, those articles have fallen in price which can be produced in almost any desired quantity in a comparatively short space of time. Other articles have fallen in price much less, for instance, fresh meat, pelts, hides, etc., which cannot be increased in quantity as rapidly as metal and textile products. Consequently the former have not fallen in price as much as the latter; on the contrary,

> they have rather risen. Of course, there are exceptional cases, caused by the competition of new countries or the cheapness of a competing substitute, as, for instance, the case of wool. It can not be asserted that the fall in prices is due to a scarcity in the circulating medium. Such a scarcity must first be proved. The diminution in the production of gold by no means proves that such a scarcity exists. The trade of modern times, especially in those branches in which it has most largely increased, is carried on less and less with coin and more and more by the use of bills, of discounts, by arbitrage, and in other ways in which coin is the standard, but it is not used in making payments. The general rate of interest and the rate of discount to merchants have lowered in the last ten years. If, nevertheless, business men find that their position has become less satisfactory, this can not be ascribed to a lack of circulating medium resulting from the gold standard, but must be explained in other ways. The great cause is the extraordinary increase in modern times, the excessive increase, in the supply of all kinds of salable commodities. Railroads and steamships bring commodities to market much quicker than the carrier and sailing vessel of former times, while the telegraph enables the same supply to be offered contemporaneously in many markets. Offers are pressed, prices fall, and the effect is intensified because the improvement in means of communication renders it needless to keep considerable stocks on hand. The same fall in prices has taken place in countries using a depreciated paper money, which indicates that the fall is not to be ascribed to an appreciation of gold.

It is then stated that when the great investments of capital in railroads in almost all the civilized countries came to a close, a large amount of labor and capital became free, and most of it was devoted to producing commodities for immediate consumption. This increase in production, and not an increase in the purchasing power of gold, has caused the great fall in prices.

M. Paul Leroy-Beaulieu writes in the same sense in an essay in the Revue des deux Mondes, May 15, 1886, which has been translated into German under the title, "The Fall in Prices and the Crisis in the World's Trade." In the preface to this translation it is pointed out that the difficulties under which the trade and industry of the whole world suffer are not to be put in the class of those temporary troubles which are the result of exceptional disturbances or previous excesses, and are soon followed by a return to normal conditions. It is said, in agreement with M. Leroy-Beaulieu, that the world's trade is entering on an entirely new phase, whose causes and effects are so deep rooted and on so large a scale that all explanations based on temporary and accidental events and measures must at once be set aside as false. Moreover, all artificial interference, resting on a superficial understanding and making a superficial attempt at improvement, is mistaken, and can result only in harm.

M. Leroy-Beaulieu denies, in a detailed discussion, the proposition that the depreciation of silver and the decrease in the production of gold are the causes of the fall in prices. The cause is to be found in the opening of new lands, in the ease of transportation from all countries, in the greater yield of newly-invested capital, in the improvement of the means of communication by sea and by land, in the decline in ocean freights and in railroad rates, and lastly in the mechanical and chemical advances made in all branches of manufacture. It is by no means necessary, in order that prices should be maintained, that the quantity of the precious metals forming by law or by custom the standard of value should increase in proportion to the extension of volume of trade. The telegraph, among other causes, diminishes markedly the use of the precious metals in international trade. The methods of offsetting payments in different markets have greatly developed. The development of international trade in securities has made it possible to send capital abroad without the transportation of a grain of gold or silver. The use of bank-notes has penetrated to all classes, and checks have become a more common medium for payments. The precious metals, accumulated as they now are in the great banks, suffer less from abrasion, from transportation, from accidental loss, and from hoarding. The whole world is adapting itself to a diminished use of precious metals, both in domestic and in foreign trade.

We have presented, without criticism of our own, these opposing opinions, from some of the best-known authorities, on the causes of the fall in prices in modern times. Such an unbiased report, in which it is likely that all the more important causes and points of view will be brought out, or at least sufficiently indicated, seems essential, at the present stage of the silver question, to the completeness of our Materials.

The discussions cited in the preceding paragraphs are concerned almost exclusively with wholesale prices. But these are not alone to be considered—perhaps they are not chiefly to be considered—in judging of the purchasing power of gold.

While merchants and manufacturers in recent years are complaining more and more of scarcity of gold, of a fall in prices, and a depression of trade, we hear, on the other hand, from quarters that deserve quite as much attention, complaints of the dearness of living and the fall in the value of money. The steady demand for higher salaries and wages is obviously quite opposed to the alleged appreciation of gold, and, indeed, is based on the assertion that the purchasing power of gold has not risen, but rather fallen. It is true that the main increase in living expenses belongs to the period from 1856 to 1873. But even in recent years, from 1878 to 1885, such an increase has continued in many respects, as, for instance, in rents in the larger cities, in the wages of servants, in professional fees, in the price of many handicraft articles. This is mainly due to the rise in the standard of living among all classes; the consequence is that everything which calls for payment of personal services has become dearer than in former times. Among the well-to-do, luxury and expense have increased appreciably even during the last decade. Every class in the population wishes to imitate the mode of life in the class just above it, and everywhere those expenses which are considered necessary, or conventionally proper, show an increase. A family which required ten and twenty years ago, say 20,000 marks per year to meet the expenses required of its rank in society, finds its budget for the same expenses rise to 25,000 marks. In the same way, a working-man's family believes that a weekly income of 20 to 25 marks does not suffice, whereas 15 or 20 marks used to enable it to make both ends meet. For many classes of subordinate officials, for teachers in the public schools and other institutions, clergymen, officers, for pensioned widows, greater sums are asked and generally are granted. The decisive reason and generally the only one alleged in support of such changes is the fall in the value of money and the consequent greater dearness of living. The decline in prices which it is attempted to prove from prices current and statistical tables, is said in practice to make no difference.

It appears, then, that the reasons brought forward to prove the increase and the decrease in the purchasing power of money are opposed to each other. It must be admitted that there is a certain degree of foundation for both views—everything depends on the point of view.

Obviously it would be a mistake if we were to pay no attention to changes in the cost of living, and were to consider only wholesale prices, when attempting to measure changes in the value of money. We shall pay attention, in accordance with the object of the present publication, chiefly to the prices of commodities, and shall return to their detailed consideration. But we should treat the subject very incompletely if we were not to present at least some statistics on wages and the cost of living. It will be necessary, however, to content ourselves with a few selected statements.

In regard to changes in wages since 1848, we are able to present a statement which differs from other and doubtless interesting statements in one important respect. It presents continuously the wages paid by a public authority to a large number of persons for the same work for a period of thirty-nine years. As will be seen in due time, the most important statistical material which we shall present on prices is derived from the trade of Hamburg. The reader will therefore welcome statements of the purchasing power of wages for ordinary labor, which also refer to Hamburg.

Daily wages paid by the Building Commission at Hamburg from 1848 *to* 1886.

Year.	Time of year.	Stone-cutters.	Masons.		Assistants to masons.		Laborers.	Working day, from morning to evening.*
			First class.	Second class.	First class.	Second class.		
		Marks.	*Marks.*		*Marks.*		*Marks.*	
1848	Summer	2.40	1.80 to 2.40		1.35 to 1.50		1.20 to 1.35	....
	Winter	1.80	1.65 1.80		1.20 1.35		1.05 1.20	....
1850–'51	Summer	....	2.40		1.50		1.20 1.35	....
	Winter	....	2.10		1.35		1.05 1.35	....
1856	Summer	....	2.40 to 2.70		1.80		1.50 1.80	....
	Winter	....	2.10 2.55		1.65		1.35 1.65	....
1861	Summer	....	2.55 2.70		1.80 to 1.95		1.50 1.80	....
	Winter	....	2.25 2.55		1.65 1.80		1.35 1.65	....
1867	Summer	3.60	2.70	2.55	2.10		1.65 1.80	6 to 7
	Winter	3.30	2.40	2.25	1.95		1.50 1.65	7 5
1868–'70†	Summer	3.60	3.00	2.70	2.25		1.80 2.10	6 7
	Winter	3.30	2.70	2.40	1.95		1.50 1.80	7 5
1871	Summer	3.60	3.00	2.70	2.25		1.80 2.10	6 7
	Winter	3.30	2.70	2.40	1.95		1.50 1.80	7 5
1872	Summer	3.90	3.30	3.00	2.55	2.40	1.80 2.40	6 6
	Winter	3.60	3.00	2.70	2.25	2.10	1.50 2.10	7 5
1873	Summer	4.05	3.30	3.00	2.70	2.55	1.80 2.40	6 6
	Winter	3.75	3.00	2.70	2.40	2.25	1.50 2.10	7 5
1874–'78‡	Summer	4.65	3.90	3.60	3.30	3.15	2.25 3.00	6 6
	Winter	4.35	3.60	3.30	3.00	2.85	1.95 2.70	7 5
1879–'85	Summer	4.65	3.90	3.60	3.30	3.15	2.25 3.00	6 7
	Winter	4.35	3.60	3.30	3.00	2.85	1.95 2.70	7 5
	Spring Fall	4.50	3.75	3.45	3.15	3.00	2.10 2.85	6 6
1886	From Mar. to Nov.	4.65	3.90	3.60	3.30	3.15	2.25 3.00	6 6
1886–'87	From Nov. to Mar.	4.35	3.60	3.30	3.00	2.85	1.95 2.70	7 5

* Inclusive of interruptions for breakfast, dinner, and supper, which amount in summer to two hours all told. At other seasons of the year the interruptions are shorter.

† Up to the close of the year 1868 tools were supplied to the workmen by the authorities. Since 1868 the workmen have furnished their own tools.

‡ Since 1874 record books were introduced for the workmen, and an organization for their care in case of sickness went into operation.

If we take the average of winter and summer wages as given in these tables, and also the average of the general statements where winter and summer wages are not specially stated, and if we reckon 304 working days to the year, we arrive at the following statement of the difference in money wages in the last thirteen years as compared with the years

1848–'51. We insert a statement in per cents. for more easy comparison:

Yearly wages.

Occupation.	1848–'51.		1874–'78.		1879–'86.	
	Marks.	*Per cent.*	*Marks.*	*Per cent.*	*Marks.*	*Per cent.*
Stone-cutters	638.40	100	1,368.00	198.00	1,368.00	198.00
Masons:						
First class	632.32	100	1,140.00	180.29	1,140.00	180.29
Second class			1,048.80	165.87	1,048.80	165.87
Mason's assistants:						
First class	422.56	100	957.60	226.62	957.60	226.62
Second class			912.00	215.83	912.00	215.83
Laborers	367.20	100	752.40	204.55	752.40	204.55

A trustworthy and important contribution toward understanding the changes in the cost of living in Germany can be found, we believe, in the following tables of the salaries of employés on the state railways of Prussia, in the years 1850, 1872, 1880, 1885. The gradual advance in these salaries is the result, in the nature of the case, of the belief that the old salaries no longer gave the employés a sufficient income, that is, an income sufficient for their station in life. Each class of employés is specified, and they are divided into different categories, so that we are able to follow in detail the changes in these incomes. The salaries in the two lower categories have risen appreciably more than those in the upper category. The two lower show an increase from 1850 to 1885 of 74.4 per cent. and 102.5 respectively, while the upper shows an increase of 46.6 per cent.

The figures of this table are taken from the printed documents of the Prussian Landtag, second legislative period, third session, 1872–'73, number 148, and from the "Statement of the employés of railroads operated by the state, of their regular salaries, etc." (Supplement B., 5, to the Budget of the Prussian Railways for 1886–'87.)

Salaries of Prussian railway employés in 1850, 1860, 1872, 1886.

Employés.	By the general regulations of November 5, 1850.			1860.		
	Max.	Min.	Average.	Max.	Min.	Average.
First class.	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
Station watchman	*1,050	750	900	†1,200	900	1,050
Track man	*1,050	750	900	†1,200	900	1,050
Signal man	*450	360	405	540	360	450
Switch man:						
First class	*450	375	405	720	450	585
Second class						
Porter	*750	450	600	900	450	675
Night-watchman	......	......	*360	450	360	405
Fireman	*750	540	645	†900	600	750
Conductor	*900	750	825	1,050	750	900
Baggage man	*750	540	645	900	540	720
Guard	*600	450	525	720	450	585
Brakeman	*600	450	525	730	450	585
Train hand (*Wagenmeister*)	......	......	......	1,050	750	900
Baggage-master	*750	540	645	900	600	750
Weigher	*750	540	645	900	600	750
Crane hand	......	......	......	......	......	......
Ticket stamper	900	600	750	900	750	825
Telegraph watchman	......	......	......	1,050	900	975
Telegrapher	......	......	......	1,050	750	900
Warehouse keeper	......	......	......	900	750	825
Office porter	*750	450	600	900	450	675
Average	......	......	644	......	......	756

Salaries of Prussian railway employés in 1850, 1860, 1872, 1886—Continued.

Employés.	By the general regulations of November 5, 1850.			1860.		
	Max.	Min.	Average.	Max.	Min.	Average.
Second class.						
Station agent:	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
First class	2,100	1,350	1,725	2,100	1,500	1,800
Second class	1,350	1,050	1,200	1,500	1,200	1,350
Assistant at station	*1,200	540	870	†1,200	900	1,050
Telegraph superintendent				2,700	1,800	2,250
Locomotive engineer	1,200	900	1,050	†1,500	900	1,200
Shop superintendent Foreman	1,800	1,200	1,500	2,100	1,200	1,650
Draughtsman Clerk	900	600	750	1,500	750	1,125
Supply agent:						
First class	*1,200	540	870	†2,100	1,500	1,800
Second class				†1,500	900	1,200
Cashier at station	*1,200	540	870	1,800	1,050	1,425
Cashier's clerk	900	600	750	1,200	750	975
Ticket seller	*1,200	540	870	†1,800	1,050	1,425
Merchandise forwarder	*1,200	540	870	†1,950	1,050	1,500
Baggage forwarder	*1,200	540	870	†1,200	900	1,050
Maintenance secretary	1,800	1,200	1,500	2,700	1,500	2,100
Operating secretary				1,650	1,200	1,425
Clerks, etc., in general office	1,800	1,200	1,500	2,100	1,200	1,650
Average			1,086			1,469
Third class.						
Operating superintendent	4,500	3,000	3,750	4,500	3,000	3,750
Traffic superintendent						
Building superintendent	2,400	1,800	2,100	2,400	1,800	2,100
Machinery superintendent	3,600	2,400	3,000	3,600	2,400	3,000
Head of main office	2,400	1,800	2,100			
Supply manager (‡)						
Inspectors	3,000	1,800	2,400	3,000	1,800	2,400
General paymaster	3,000	1,800	2,400	3,600	2,400	3,000
Operating paymaster						
Book-keeper Head cashier	2,100	1,450	1,725	2,400	1,500	1,950
Average			2,496			2,700

Employés,	1872.			1886.		
	Max.	Min.	Average.	Max.	Min.	Average.
First class.	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
Station watchman	1,650	1,340	1,500	1,800	1,500	1,650
Track man	1,950	1,350	1,650	2,100	1,500	1,800
Signal man	†750	660	705	750	660	705
Switchman:						
First class	†1,050	810	930	1,200	990	1,095
Second class				1,050	810	930
Porter	†1,050	810	930	1,050	810	930
Night-watchman			†600	600		
Fireman	1,200	810	1,005	1,200	900	1,050
Conductor	†1,200	1,050	1,125	1,350	1,050	1,200
Baggage-man	†1,050	990	1,020	1,200	990	1,095
Guard	†990	780	885	990	780	885
Brakeman	†990	690	840	990	690	840
Train-hand (*Wagonmeister*)	1,200	960	1,080	1,350	1,050	1,200
Baggage-master	†1,320	990	1,155	1,350	1,050	1,200
Weigher	†1,320	990	1,155			
Crane hand	1,050		930	1,050	810	930
Ticket stamper	1,200	840	1,020	1,350	900	1,125
Telegraph watchman	1,500	1,200	1,350	1,875	1,425	1,650
Telegrapher	1,350	1,050	1,200	1,500	1,050	1,275
Warehouse keeper	1,200	840	1,020	1,350	900	1,125
Office porter	†1,050	810	930	1,050	900	975
Average			1,079			1,123

Salaries of Prussian railway employés in 1850, 1860, 1872, 1886—Continued.

Employés.	1872.			1886.		
	Max.	Min.	Average.	Max.	Min.	Average.
Second class.						
Station agent:	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
First class	3,000	1,950	2,475	3,200	2,100	2,650
Second class	1,950	1,650	1,800	2,100	1,800	1,950
Assistant at station	1,350	1,350	1,500	1,800	1,500	1,650
Telegraph superintendent	3,600	2,700	3,150	3,600	2,700	3,150
Locomotive engineer	1,650	1,200	1,425	1,800	1,200	1,500
Shop superintendent	2,400	1,950	2,175	3,200	2,100	2,650
Foreman				2,400	1,950	2,175
Draughtsman	1,950	1,050	1,500	1,950	1,500	1,725
Clerk				1,950	1,200	1,575
Supply agent:						
First class	2,700	1,950	2,325	3,000	2,100	2,550
Second class	1,950	1,350	1,650	2,100	1,350	1,725
Cashier at station	2,550	1,500	2,025	3,200	2,400	2,800
Cashier's clerk	2,550	1,350	1,650	....	....	....
Ticket seller	1,950	1,500	2,025	2,550	1,800	2,175
Merchandise forwarder	2,550	1,500	2,025	2,550	1,800	2,175
Baggage forwarder	1,650	1,050	1,350	....	....	....
Maintenance secretary	3,300	1,800	2,550	3,600	2,100	2,850
Operating secretary	2,100	1,350	1,728	2,400	1,350	1,875
Clerks, etc., in general office	3,300	1,800	2,550	....	....	....
Average	....	....	1,994	....	....	2,199
Third class.						
Operating superintendent	4,800	3,600	4,200	4,800	3,600	4,200
Traffic superintendent	....	....	....	4,800	3,600	4,200
Building superintendent	3,000	2,400	2,700	4,800	3,600	4,200
Machinery superintendent	4,200	2,400	3,300	4,800	3,600	4,200
Head of main office	....	....	....	....	....	....
Supply manager (‡)	4,500	3,600	4,050	....	....	....
Inspectors	3,600	2,250	2,925	3,600	2,250	2,925
General paymaster	4,500	3,600	4,050	4,800	....	....
Operating paymaster	....	....	....	4,000	3,200	3,600
Book-keeper	3,300	1,800	2,550	3,600	2,100	2,850
Head cashier				3,600	2,100	2,850
Average	....	....	3,397	....	....	3,659

[*] Uniform in addition. [†] Uniform not included.

[‡] This office has been abolished; those formerly holding it are now maintenance secretaries.

Prices of land, and especially of agricultural land, would be of great interest for the discussion of changes in the purchasing power of money. It would not be difficult to get any number of single statements on this subject, from which, however, no general conclusions could be drawn. It is exceedingly difficult to get tables, even for small districts, which can be used with any confidence as indicating, even approximately, changes in the value of land. In general it is well known that the price of landed estates rose greatly in the sixties and in the early part of the seventies, and it is known that this rise in price has not continued since. But how great was the change in the general level of prices is indicated by no trustworthy statistics; and we are not able to fill this gap. In the absence of better information we venture to present a few statements of the rents paid in former times and at present for certain domains[*] of Prussia. As these domains are generally leased for long periods, as a rule for eighteen years, their rents are likely to run parallel with the selling prices of private estates of a similar kind, and indicate pretty closely what was the movement in the prices of the latter. It is true that on the renewal of some of the leases, whose totals we present, new conditions were inserted; but changes of this kind were made, on the whole, to no great extent and may fairly be disregarded. In some countries, in former times, personal considerations had an effect on the leases, but this was not the case in Prussia. The domains yielded as follows in the budgets of the years mentioned:

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[*] Strictly: Domänen-Vorwerke.

Years.	Area.	Per hectare.	Total.
	Hectares.	*Marks.*	*Marks.*
In the old provinces:			
1850	318, 228	14. 10	4, 486, 947
1860	295, 155	17. 55	5, 179, 209
1870	296, 580	26. 46	7, 847, 265
1880–'81	290, 476	34. 61	10, 054, 714
1884–'85	288, 731	37. 85	10, 927, 170
1886–'87	287, 889	38. 25	11, 010, 410
In newly-acquired districts:			
1870	51, 949	39. 60	2, 057, 000
1880–'81	53, 214	47. 78	2, 542, 533
1884–'85	50, 847	52. 45	2, 666, 854
1886–'87	50, 708	52. 85	2, 680, 155

It appears that in the old provinces rents rose between 1850 and 1886–'87 from 14.10 marks per hectare to 38.25 marks per hectare; that is, 171 per cent. In newly-acquired districts rents rose between 1870 and 1886–'87 from 39.60 marks to 52.85 marks, or 33 per cent. The net yield of the land tax on all the domain lands was, in the budget of 1884–'85, 7,658,401 marks (on 339,578 hectares cultivable ground), while the rents yielded 13,735,677 marks, or 40.45 marks per hectare.

The leases of domains of which earlier leases were thrown up between 1874 and 1875 yielded the following results:

Year.	Number of estates.	Surface.	Former rent per hectare.	New rent per hectare.	Increase in rent per hectare.
		Hectares.	*Marks.*	*Marks.*	*Marks.*
1874	38	15, 130	28. 34	43. 29	14. 95
1875	58	18, 357	31. 07	43. 15	12. 08
1876	46	16, 981	31. 48	48. 83	17. 35
1877	58	20, 430	29. 99	51. 99	22. 00
1878	48	20, 747	26. 00	34. 85	8. 85
1879	49	27, 827	28. 71	36. 96	8. 25
1880	35	18, 723	31. 49	33. 93	2. 44
1881	43	20, 211	38. 17	41. 99	3. 82
1882	42	16, 602	37. 86	39. 54	1. 68
1883	69	26, 097	35. 20	51. 58	16. 38
1884	39	14, 092	36. 15	46. 69	10. 54
1885	43	*18, 873 †18, 690	34. 28	45. 34	11. 06

* Formerly. † At present.

The following statement of the changes in the rents of certain dwelling houses at Hamburg during the last thirty-five years will be of interest. They do not indicate, of course, changes in rents in general; but they are worth noting, because they rest upon detailed inquiries made year for year, and refer to dwellings in which no changes of importance were made during the whole period.

Estimated house rents (including rents when vacant).

Years.	Nine houses with high rents.		Ten houses with low rents.	
	Rent.	Increase.	Rent.	Increase.
	Marks.	*Per cent.*	*Marks.*	*Per cent.*
1850	33,955	100.0	55,762	100.0
1855	38,374	113.0	55,822	100.1
1860	49,104	144.6	59,268	106.3
1865	51,520	151.7	63,858	114.5
1870	57,635	169.7	75,119	134.7
1875	64,071	188.7	97,260	174.4
1880	72,178	212.6	109,242	195.9
1885	73,131	215.4	116,242	208.5
1886*	72,817	214.5	111,474	211.9

* The total in 1886 for the cheaper houses could be given fairly for only nine out of the ten, the tenth having been entirely rebuilt. In the figure indicating the per cent. of increase, allowance has been made for this.

We have at hand detailed calculations of the living expenses of two families in Brunswick, each consisting of six persons. One was the family of a workingman in fairly good circumstances; the other that of a government official not highly placed. The expenses are the general current expenses, including rents, fuel, and clothing, but not including outlays for education, medical attendance, amusements, or taxes. An exact detailed account is not given, but only an approximate statement, which, however, has the advantage of having been prepared without any bias or any social prejudice, and on the same method for the same place since the year 1850. (See "Betheiligung am Gewinn und National-Versorgung," by Dr. H. Scheffler, Brunswick, 1876. We have also later communications from the author.)

Years.	Workman's family.		Government official's family.	
	Marks.	*Per cent.*	*Marks.*	*Per cent.*
1850	794.40	100	1,120.50	100
1870	1,203.30	151	1,905.60	170
1875	1,395.90	176	2,181.30	195
1885	1,359.80	171	2,341.24	209

In regard to retail prices for the same years we are able to give, again on Dr. Scheffler's authority, the following statements:

	1850.	1870.	1875.	1885.
	Marks.	*Marks.*	*Marks.*	*Marks.*
Beef:				
Small ... pound	.30	.50	.55	.50
Large ... do	.35	.60	.65	.60 to .65
Veal:				
Small ... do	.25	.40	.50 to .60	.45
Large ... do	.35	.70	.70 to .75	.70 to .75
Pork ... do	.30	.60	.65 to .70	.60 to .70
Butter ... do	.50 to .60	1.00 to 1.40	1.15 to 1.50	.95 to 1.50
Flour ... cwt	10.00	20.00	16.00	15.00
Rye meal	6.00	12.00	11 to 12	12.00
Eggs ... per shock (60)	1.60	3.00	3.50 to 4.50	3.00 to 4.00
Milk ... per quart	.11	.14	.16	.16
House-maid's yearly pay	36 to 48	72 to 90	90 to 150	120 to 150
Washerwoman ... per day	1.00	1.25 to 1.50	1.50	1.75 to 2.00
Seamstress ... do	.70	1.20 to 1.50	1.50	1.50 to 2.00
Unskilled laborer ... do	1.00	1.50	2.25 to 2.50	1.75 to 2.00
Mason ... do	1.45	2.15	3.50	3.20 to 3.50
Carpenter ... do	1.60	2.50	3.50	3.20 to 3.50
Two-horse carriage ... do	7	13	18	24

In England several attempts have been made to ascertain the changes in the general purchasing power of money, by referring to the average costs of supporting persons in the same manner in large institutions. As we shall deal in the present publication chiefly with prices at Hamburg, we insert statements of the average cost of support at a large institution at Hamburg, the General Hospital. We have to deal here with the support of about 700 persons per day, or 620,000 per year, and with a careful and economical administration, in which everything is bought on a large scale. In this institution the cost of board per person (patients and employés included) has been as follows since 1841:

Year.	Per day.	Per year.	Per cent.
	Pfennigs.	*Marks.*	
1841-'50	37. 0	134. 99	100. 0
1851-'60	42. 9	156. 60	116. 0
1861-'70	52. 2	190. 59	141. 2
1871-'75	75. 8	276. 76	205. 0
1876-'80	89. 0	325. 34	241. 0
1881	89. 7	327. 44	242. 4
1882	87. 4	319. 16	236. 0
1883	86. 2	314. 48	233. 7
1884	80. 7	295. 29	218. 7
1885	75. 0	273. 68	202. 7
1881-'85	83. 8	306. 01	226. 6

It appears that the cost of board rose between the decade 1841-'50 and the year 1881 by more than 145 per cent. Since 1881 there has been a fall, though not a considerable one. Until 1870 the rise in price was a moderate one; thereafter it was rapid and great. A considerable part of the increase in expense is shown by the accounts to have arisen from the much higher prices of meat, milk, butter, etc. But this does not suffice to explain the extraordinary increase in expenses, which must be ascribed in part to the fact that the board has become better and more liberal since 1870. Yet, even if due allowance is made for this circumstance, the fact of a noteworthy increase in the rise of board from 1871 to 1883 is not to be denied.

The statements in the preceding paragraphs of the changes that have taken place in the cost of living, in wages, in salaries, etc., by no means pretend to give an exhaustive treatment of these matters. They are meant only to make clear that the statistics of the prices of commodities alone are by no means decisive of the question of a change in the purchasing power of gold. But they show clearly that the gradual changes in the standard of living of different classes have a great effect on the value of money, and perhaps deserve more attention than the wholesale prices of commodities. Yet we should not have a measure of changes of this kind, even if we had a series of statements showing the expenses of living for different families of the same position in life and of the same numbers, and even if we could make comparisons of such cases; for the money expenses of different classes for these purposes are not likely to increase or diminish in the same degree at different places and different times. One family perhaps spends 50 per cent. more than was spent by a family in essentially the same circumstances thirty or forty years ago, and is not conscious of incurring any unnecessary expense. Another family perhaps expends but 30 per cent. more; and there may be innumerable variations. How can we get a trustworthy average under such circumstances? Whatever method be adopted, notwithstanding the most complete statements and the greatest care, it is impossible to get an expression in figures of the changes in the purchasing power of money. Yet it can not be doubted that the increase in the standard of living in almost every class in civilized countries has brought about a rise in money payments for personal services of every kind, and that this increase has taken place even in times when the wholesale prices of important commodities were failing.

An important circumstance, serving to explain the fall in wholesale prices while the cost of living was rising, or at least remained unchanged, is the cost of distribution; that is, the addition to prices in the course of jobbing and retail trade, which goes far to offset for consumers the cheapening of production.

A natural consequence of the state of things sketched in the last few pages is that the continued and considerable fall in the prices of commodities generally bears hard on men of business and on invested capital, and not on the workmen. Every one can observe this effect for himself, yet its eminent importance makes it worth while to present an unusually clear confirmation of the rule, brought out by a statistical compilation as complete and instructive as could be imagined.

The Belgian minister, Primez, published in September, 1884, a work entitled *La Crise; Examen de la Situation Économique de la Belgique* (Brussels), at the close of which there is a table giving exact statements, compiled in the same manner year after year for the twenty-four years from 1860 to 1883, in regard to the production of coal in the province of Hennegau. Between 60,000 and 83,000 workmen are employed, and as many as 13,500,000 tons of coal are annually produced. Lack of space prevents us from giving the results for each year, and we must content ourselves with average statements for the three periods, 1860–'71, 1872–'76, 1877–'83. Letters which the author has been kind enough to send, enable us to present also the figures for the years 1884 and 1885.

Production of coal in Hainaut, 1860–'85.

Years.	Production.	Expenses.	Value.	Profit.	Cost, per 1,000 kilograms.		
					Labor.	Other expenses.	Total.
	Tons.	*Francs.*	*Francs.*	*Francs.*	*Francs.*	*Francs.*	*Francs.*
1860–'71	9,000,000	91,000,000	102,000,000	10,200,000	5.72	4.49	10.21
1872–'76	11,100,000	158,000,000	182,000,000	24,400,000	8.34	5.91	14.24
1877–'83	12,000,000	120,000,000	122,000,000	1,900,000	5.67	4.36	10.03
1884	13,500,000	115,500,000	129,600,000	4,700,000	5.32	3.93	9.25
1885	12,900,000	101,600,000	114,700,000	5,500,000	4.74	3.71	8.45

Years.	Selling price, per 1,000 kilograms.	Profit, per 1,000 kilograms.	Salaries.	Number of workmen.	Average salary per workman.	Proportion of labor in general production, less other expenses.
	Francs.	*Francs.*	*Francs.*		*Francs.*	*Per* 100.
1860–'71	11.33	1.12	52,000,000	65,000	797	83
1872–'76	16.38	2.12	95,000,000	79,000	1,173	82
1877–'83	10.18	.15	71,000,000	76,000	897	97
1884	9.59	.41	71,900,000	78,800	911	94
1885	8.88	.39	61,200,000	76,900	796	92

The figures of this table speak so plainly that there is hardly occasion to comment on them. The statements for single years bring out even more clearly the remarkable changes resulting from the excessive rise of prices in the speculative period, 1871–'74, and from the low prices of recent years; yet the averages of longer periods are more significant of the actual course of events. If we compare the year 1885 with the decade 1860–'71, we find that the price of coal fell from 11.33 to 8.88 francs per 1,000 kilograms; that the profit sank from 1.12 francs to 0.39 francs per 1,000 kilograms; that wages, notwithstanding the reduction which became necessary in 1885, remained at the same point as in 1860–'71. Meanwhile the profits, inclusive of interest on capital, sank from 10,200,000 to 5,500,000 francs; and averaged during the years 1877–'83 only 1,900,000 francs. The share of labor in the total product, after deducting other expenses, was 83 per cent. in 1861–'70 and 92 per cent. in 1885. The depression of trade, whether the result of scarcity of gold, of overproduction, or of other causes, bears incomparably harder on capital and the business man than on wages and the workman.

We now leave the question of changes in the value of money in its relation to expenses of living, wages, etc., and come to an end with the digression which its discussion caused us to make into the closely related field of the social question. We turn to investigations of the prices of commodities. As we have seen, general prices are still treated in some quarters under the influence of the so-called *Quantitäts-Theorie*, while in other quarters it is considered quite independently of that theory. It is not within the scope of the present publication to express an opinion as to the soundness of one or the other of these views. Our task is simply to present impartially the different views, and the materials for understanding them.

In what has preceded and in what will follow we use the words "money" and "gold" indiscriminately. This does not really cause any uncertainty of meaning, since gold is directly or indirectly the sole measure of value in the wholesale trade of all commercial countries, even though the medium of exchange may consist of silver coins, and accounts may be kept in them.*

It has already been pointed out that both in domestic and in international transactions actual gold is little used, in comparison to the use of credit and bank clearings. But we should not fail to take account of the repeated and emphatic assertions that this substitute for gold is available only in ordinary times. In case of a future general crisis or shock to credit, we are told it would be impossible to conceive the intense demand for actual gold which would set in, and the downward pressure which would be exerted on prices. But it has also been pointed out that when such a catastrophe sets in, it makes little difference whether silver is a legal tender in addition to gold. At such times one must be prepared not only for a demand for the payment of bank notes, but for the payment of all debts payable on demand by banks. The total deposits alone in the ten London joint-stock banks amounted at the close of 1883 to £123,267,000, while these banks hold in their own vaults and in the Bank of England only £15,911,000 in cash. The total deposits and accounts-current of the banks of the United Kingdom reached on the 1st of July, 1885, the colossal sum of between £570,000,000 and £580,000,000, whereas the Bank of England held only £27,481,488 of gold. Even if the metallic reserve of the Bank of England were to be doubled, or more than doubled, it would still be very small in comparison to the demand obligations in the United Kingdom which would all be thrown on the Bank of England. In crises of this kind, which fortunately are likely in the future to occur less frequently and to pass by more quickly, the only resource after all would be paper money inconvertible for the time being. It would be immaterial whether there were a gold standard, a double standard, or a silver standard.

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* This is clearly expressed in the following remarks made by an English author: "There is no denying the fact that monetary systems may be called bi-metallic, or single silver; but the income of all nations within European control or influence, all wages, all manufactures, all the world's produce, come at last to be measured in value solely and inexorably against gold, and, infinitely more than all coins, against the unit of the one-pound sterling. * * * The relative value of all of the metals tends constantly to become the same at any given time in all commercial markets, without reference to which may be the legal standard in each particular market, so that, for example, the price of silver purchased with gold can never vary more than a minute fraction in Calcutta from the simultaneous price in London."

Changes in general prices whose cause does not lie in the cost of production of commodities, or in the conditions of their supply and demand, but which are the result of a cause affecting the medium of exchange, as in the case of an excessive issue of inconvertible paper money, must affect in the long run all articles alike. It is immaterial whether the articles are sold in large or small quantities. Those changes in prices, however, which are caused by variations in the cost of production of commodities, must show great differences; and it is only when taken as a whole that they will show such an effect that we shall be able to judge whether there has been a change in the purchasing power of money. In the nature of the case, it is impossible to find a method by which we shall be able to infer, with exactness, from a specified number of commodities, changes in the general level of prices. Nothing more than approximate estimates can be secured.

The late Professor Jevons first proposed, in 1863, the following method: He began by calculating from quarterly prices the average prices of a series of important articles during the six years, 1845–'50. He assumed each average price to be 100, and on this basis made a percentage comparison of the prices of the same articles on the 1st of January or 1st of July of each year following. Mr. Newmarch, and the publishers of the London Economist, have continued these quotations and calculations of forty-seven articles up to the present time. The prices of a number of similar articles have been grouped together in making the percentage calculation, so that at the end twenty-two articles are left, for whose prices the so-called index numbers are calculated for comparison with the prices in 1845–'50. Adding up these twenty-two index numbers, and taking 2,200 as the basis for 1845–'50, we get the total index number, which serves to indicate yearly changes in the level of prices.

The articles included in the Economist list are: Coffee, sugar, rum, tea, tobacco, butter, wheat, potatoes, beef, mutton, pork, silk, flax, linen yarn, hemp, wool, logwood, indigo, sperm-oil, petroleum, timber, tallow, leather, saltpeter, potash, copper, iron, lead, steel, tin, coal, raw cotton, cotton yarn, cotton goods.

The authors of these index numbers did not fail to see the objections to their method, by which the simple addition of the comparative prices of articles of very unequal importance was made to measure changes in the general level of prices. The tables of index numbers in the Economist are regularly prefaced by the following note:

> The total index number does not, of course, present a full and accurate representation of the variations in prices, inasmuch as it can not allow for the relative importance of the different articles. Wheat, for example, reckons for no more in the total index number than indigo; and during the years of the high price of cotton and cotton fabrics, the total index number is in a measure unduly raised by that special cause. Still the total index number, read with the needful qualification, may afford important inferences.

Mr. Hans Forsell, some time minister of finance in Sweden, differs from this judgment in his recently published work entitled, Guldbristen och de laga Varuprisen (Stockholm, 1886). On the contrary, he condemns emphatically the method of total index numbers, and all conclusions drawn from them, because they fail to take account of the relative importance of commodities. By adding or omitting a few important articles of commerce, the total index number might be made to rise or to fall according to the wishes of the compiler. The total index numbers, therefore, prove nothing whatever. Mr. Forsell thinks the extraordinary fluctuations in the prices of many articles can be explained from separate causes, which have no connection whatever with the purchasing power of gold.

Mr. Palgrave has endeavored to free the total index numbers, to which much weight is attached in England, from the objection that they fail to consider the relative importance of commodities, and has caused Mr. Nash to prepare for his Memorandum, already referred to, a new calculation of index numbers for the 22 articles of the Economist list. For the new index numbers the basis (100) is not taken for the years 1845–'50, but for the years 1865–'69. Mr. Nash illustrates the great importance of considering the relative importance of commodities by the example of wheat and indigo, which has been already alluded to. The value of the net import of indigo into England in 1885 was in round numbers £600,000. The value of the imported wheat and flour, plus that of the domestic production of wheat, was £49,350,000. Wheat, therefore, was an article eighty-two times as important as indigo, and a rise or fall of only 1 per cent. in the price of wheat, therefore, should have in a properly constructed table of index numbers the same importance as the rise or fall of 82 per cent. in the price of indigo.

Mr. Nash calculates for the years 1865–1885 the value of the quantity annually consumed of each of the 22 articles in the United Kingdom, and assigns a figure indicating its relative importance to each commodity. The results of this method will appear sufficiently from the following table for the years 1865, 1875, 1885:

Articles.	1865.		1875.		1885.	
	Consumption.	Index number.	Consumption.	Index number.	Consumption.	Index number.
Cotton	£47,000,000	428 (19.5)	£39,700,000	311 (14.1)	£31,600,000	263 (12.0)
Silk	6,300,000	57 (2.6)	2,100,000	17 (0.8)	1,400,000	12 (0.5)
Hemp	9,900,000	90 (4.1)	7,450,000	58 (2.6)	5,900,000	49 (2.2)
Flax and wool	18,400,000	168 (7.6)	21,300,000	167 (7.6)	17,100,000	142 (6.5)
Meat	44,300,000	405 (18.4)	55,500,000	435 (19.8)	63,000,000	524 (23.8)
Iron	12,000,000	109 (5.0)	16,200,000	127 (5.8)	18,000,000	150 (6.8)
Copper	4,800,000	44 (2.0)	4,650,000	37 (1.7)	4,680,000	39 (1.8)
Lead	2,100,000	19 (0.9)	3,100,000	24 (1.1)	1,550,000	13 (0.6)
Zinc	1,300,000	12 (0.5)	2,000,000	16 (0.7)	1,800,000	15 (0.7)
Timber	17,800,000	160 (7.3)	20,000,000	157 (7.1)	19,650,000	164 (7.5)
Tallow	5,100,000	47 (2.1)	3,950,000	31 (1.4)	3,340,000	28 (1.3)
Leather and hides	5,600,000	51 (2.3)	8,800,000	69 (3.1)	9,600,000	80 (3.6)
Indigo	200,000	2 (0.1)	300,000	2 (0.1)	600,000	5 (0.2)
Oils	5,500,000	50 (2.3)	4,900,000	38 (1.7)	5,900,000	49 (2.2)
Coffee	1,400,000	13 (0.6)	1,500,000	12 (0.6)	930,000	8 (0.4)
Sugar	11,000,000	100 (4.5)	21,000,000	165 (7.5)	17,920,000	149 (6.8)
Tea	7,300,000	66 (3.0)	11,100,000	87 (4.0)	8,500,000	71 (3.2)
Tobacco	2,600,000	24 (1.1)	2,500,000	20 (0.9)	3,500,000	29 (1.3)
Wheat and flour	39,000,000	355 (16.1)	54,300,000	427 (19.4)	49,350,000	410 (18.6)
Total	241,600,000	2,200 (100.0)	280,350,000	2,200 (100.0)	264,320,000	2,200 (100.0)

This Memorandum, moreover, contains a similar calculation of the changes in the prices of twenty-two articles in France, as reported in the French trade statistics. The relative importance of commodities is taken into account, and the prices ascertained by the Commission Permanente des Valeurs are used. The articles selected are coffee, sugar, cereals, beef cattle, butter, rice, tobacco, linseed, palm-oil, tallow, silk, cotton, wool, hides, coal, iron, steel, copper, lead, zinc, and the following articles of export, silk goods, woolen goods, and gloves. It is true that only important articles are on this list, but the enormous difference in their relative importance is easily seen. For instance, for the year 1883 cereals are reckoned at 375,000,000 francs, wool at 318,000,000 francs, while zinc is put at 13,600,000 francs, and imported iron and steel at 27,100,000 francs. The quantity of each commodity produced at home is left entirely out of account. The years 1865–'69 were again used as the basis for this French calculation. The reason was that no figures for the period before 1869 exist for prices in India, with which a comparison was sought.

We now present the total index numbers of the level of general prices as ascertained by the various methods just described:

Years.	Total index numbers of Economist, without regard to relative importance of commodities.		Total index numbers of Economist, with regard to relative importance of commodities.		Total index numbers of French prices, with regard to relative importance of commodities.	
1865	2,434		2,366		2,331	
1866	2,449		2,434		2,380	
1867	2,156		2,179		2,144	
1868	1,982		2,058		2,110	
1869	1,979		1,963		2,045	
1865–'69	2,200	(100)	2,200	(100)	2,200	(100)
1870	1,995	91	1,975	90	2,000	91
1871	1,981	90	2,046	93	2,250	102
1872	2,132	97	2,197	100	2,310	105
1873	2,237	102	2,298	104	2,300	105
1874	2,207	100	2,378	108	2,125	97
1875	2,098	95	2,125	97	2,085	95
1876	2,044	93	2,186	99	2,090	95
1877	2,064	94	2,205	100	2,107	96
1878	1,910	87	2,081	95	2,010	91
1879	1,676	76	1,805	82	1,915	87
1880	1,918	87	1,967	89	1,937	88
1881	1,782	81	2,054	93	1,900	86
1882	1,830	83	1,908	87	1,855	84
1883	1,755	80	1,924	88	1,756	80
1884	1,660	75	1,750	80	....	....
1885	1,550	70	1,669	76	....	....

If we compare these tables, we are surprised to find that the index numbers reached by the different methods do not vary greatly from each other. The great fall in prices in the decade just passed comes out with equal clearness in all of them. We do not believe, however, that this agreement disposes of all criticism of the tables. These attempts to secure some degree of confidence in the approximate correctness of the index numbers, as modified by the consideration of the relative weight of commodities, are yet open to serious objections. Above all, it is said that the consideration of no more than twenty-two articles, however carefully they may have been selected, neglects a number of very important articles whose prices are of great importance when we try to determine the purchasing power of gold. Not less well founded is the objection that a great rise or fall in the price of a few important articles on the list, although caused by speculation and of only temporary duration, may exercise a great effect on the index number arrived at. For the French figures, a closer examination shows that the relative weight of the twenty-two commodities has been assigned in a careless and misleading manner.

Our wish to secure room for a detailed presentation of the true average prices of one hundred important commodities in Hamburg in the years from 1847 to 1885, and the objections against the Economst's figures and other figures meant to indicate the general level of prices, induce us to omit in this edition of the Materials the detailed presentation of the Economist's tables, and to content ourselves with the summary tables given above.

We can not omit, however, from these Materials, in the present stage of the silver question, a statement of prices in India since the beginning of the depreciation of silver. But we are compelled to condense it. It is derived from the communications made by the India office to Mr. Palgrave and published by him in his Memorandum. The prices for ordinary rice and for wheat are the average prices of six places. Those of other articles are prices at the places of export. The prices of cotton is that of fair Dhollera at Bombay.

Years.	Rice ordinary.		Wheat.		Cotton.		Castor-oil.	
	Seers per rupee.	Index number.	Seers per rupee.	Index number.	Rupees per candy.	Index number.	Rupees per maund.	Index number.
1865–'69	16.63	100.00	15.58	100.00	263	100.00	11.61	100.00
1870	19.61	84.80	15.70	09.23	244	92.77	11.87	102.23
1871	20.99	72.22	22.12	70.43	209	79.46	11.56	99.56
1872	23.76	69.99	19.97	78.01	245	93.15	13.00	111.97
1873	20.85	79.76	18.98	82.08	203	77.18	12.40	106.80
1874	14.53	114.45	18.79	82.96	159	60.45	11.81	101.72
1875	17.50	94.54	23.13	67.35	167	63.50	9.26	79.75
1876	15.60	106.60	24.42	63.80	178	67.68	9.81	84.49
1877	15.63	106.39	18.91	82.39	192	73.00	13.56	116.79
1878	11.92	139.51	13.42	116.09	195	74.14	14.93	128.59
1879	12.52	132.82	14.67	106.20	224	85.17	12.87	110.85
1880	17.12	97.13	16.39	95.05	203	77.18	10.75	92.59
1881	22.28	74.64	18.57	83.89	188	71.48	10.18	87.68
1882	22.67	73.35	18.87	82.56	181	68.82	10.01	86.21
1883	18.05	92.13	18.96	82.17	174	66.16	10.78	92.85
1884	14.70	113.12	21.36	72.93	195	74.14	10.50	90.43
1880–'84	18.96	90.07	18.83	83.32	188	71.48	10.44	89.92

Years.	Linseed.		Jute.		Hides.		Fall in price of silver (compared to gold).
	Rupees per maund.	Index number.	Rupees per bale.	Index number.	Rupees per corge.	Index number.	
1865–'69	4.63	100.00	19.26	100.00	49.25	100.00	1,000.00
1870	4.30	92.87	26.25	136.25	56.50	114.72	965.03
1871	4.40	95.03	24.87	129.12	64.00	129.94	992.10
1872	4.76	102.78	21.32	110.69	61.75	125.38	976.14
1873	4.94	106.69	19.87	103.16	77.25	156.85	958.85
1874	4.75	102.59	22.87	118.74	81.75	165.98	950.49
1875	4.04	87.25	19.50	101.24	71.25	144.67	927.71
1876	4.16	89.84	22.25	115.52	70.50	143.14	879.79
1877	4.60	99.35	26.12	135.61	60.00	121.82	891.90
1878	4.92	106.26	27.25	141.53	64.00	129.94	849.16
1879	5.09	110.41	27.50	142.78	71.00	144.16	856.33
1880	4.59	99.13	28.25	146.67	78.00	158.37	856.11
1881	4.23	91.36	26.00	135.00	69.50	141.11	853.49
1882	3.76	81.20	19.03	98.80	66.00	134.01	837.61
1883	4.08	88.12	23.75	123.31	80.00	162.43	838.09
1884	4.20	90.71	20.50	106.43	79.50	161.42	828.31
1880–'84	4.17	90.06	23.51	122.06	74.60	151.45	842.72

Mr. Barbour, Secretary of Finance to the Indian Government, has given his attention, in the work already referred to (The Theory of Bimetallism, 1886), to the movement of prices in India under the influenee of the depreciation of silver. His investigations indicate that from 1873 to 1884 there was a slight temporary rise in the prices of articles of export in Calcutta, but that in 1885 a distinct fall set in. The silver prices of articles of import had not risen in India in proportion to the lower prices of silver, but, on the contrary, had fallen somewhat. For instance, 100 yards of gray piece goods, which had cost in the year 1874–'75 13 rupees 1 anna, cost in 1884–'85 10 rupees 8 annas. These statements referred to prices at the sea-ports. Whether prices in the interior had risen it was impossible to state exactly, in view of the extraordinary differences in the circumstances of the different parts of that enormous country. But it is certain that the wages of skilled labor, masons, carpenters, blacksmiths, etc., had risen everywhere.

We are indebted to the Hamburg Prices Current for Money, which were issued every Tuesday and Friday, for the complete and exact quotations which enabled us to ascertain month for month and year for year the ratio that existed in free markets between gold and silver during the 144 years from 1687 to 1830. We are similarly indebted to the Official Trade Statistics of Hamburg for material for ascertaining the annual wholesale prices of commodities from 1847–'85—material which is complete and trustworthy to a higher degree than any known to us.

Throughout this period Hamburg was an important market for almost all raw materials. Moreover, it has been a free port, without duties or differential taxes. Commodities imported are declared in writing, with a statement of their weight and of their ordinary trade designations. Their value is stated separately for each commodity, either according to its price on 'change that day, or, if there were no quotations, according to the probable price, which was to be, in the absence of other data, the purchase price plus the cost of importation. For consigned goods a careful estimate of the prices sufficed, sometimes supplemented with a statement of their insured value. These declarations, which were carefully supervised, were then collected by the Bureau of Trade Statistics, and tables were made out of the quantity and value of goods exported and imported.

In these tables we find the average prices for each year for a large number of articles (in 1885 for 318 articles), all based on the declarations mentioned. Prices are given not only for each article, but for each article according to the place whence imported. The quantities and kinds of many important articles undergo changes in the course of decades, and it seemed therefore proper to take no account of the different kinds of each article, but to treat all kinds as one, in order to get a general indication of the changes in prices. Some five years ago the bureau of trade statistics at Hamburg prepared, at our request, on the method of index numbers, a "Statement by per cents of the changes in five-year and ten-year periods of the average prices of 100 articles of trade, in the years from 1851–'80, compared with the average prices of the years 1847–'50." We published this statement, which has since been frequently cited, in our essay on "The statistics of the previous metals, 1876–'80," in the Jahrbücher für National-Oekonomie, new series, vol. iii.

It has been objected to this compilation that the period from 1847–'50 is used as the basis, whereas the decade from 1841–'50 would have been preferable. This may be freely admitted; and had we had a choice, we should certainly have used the period 1841–'50 rather than that of 1847–'50. But for the period before 1851 we possess statements only for the four years preceding. A change in our initial year was therefore impossible.

Other objections to this compilation, however, which are directed against the selection of the articles, are not without foundation. It would lead us too far to discuss them here in detail. We have carefully gone through the list of articles again, and have excluded those for which the Hamburg wholesale prices are not fairly to be considered indicative of prices in general trade. Some articles now of importance can not be considered at all in this comparison, because they have come into general use since 1850; for instance, petroleum. Another essential change has been made in the compilation, in that a number of very important articles are now included in them for which the official declarations gave no figures. Their wholesale prices since 1877 have been ascertained from the yearly accounts of large institutions at Hamburg. This has been done especially for meat, butter, milk, and eggs. The prices of yarns and cloths, which were embraced in the earlier compilation from the Hamburg prices, have now been excluded, since the indirect influence of the German import duties on the importation of cheaper grades prevents the prices from indicating the general range of prices of such articles. In their place we have given corresponding average prices of yarns and cloths exported from England, as well as the prices of some other articles of manufacture, all derived from the British trade statistics.

The first edition of our Materials indicated the average prices not of each year, but of periods of several years, namely, 1851–'60, 1861–'70, 1871–'75, 1876–'80, 1881–'84. The wish has been expressed in several quarters that the tables should be completed by giving the average prices for each year, since such prices would serve to indicate more clearly and accurately the changes in the general level of prices and the movement of the prices of individual articles. We could not but admit that this wish had its justification, the more so as we have become convinced that the twenty-two index numbers of the English publications fulfill their object very insufficiently, and may be replaced with advantage by a more detailed statement of average prices at Hamburg.

The great importance of this statement of average prices lies in the general survey which it gives of the average prices of the most important articles continuously since 1851. Prices can be followed here, year for year, by themselves and in their connection with other prices, and moreover with assurance that they are not based upon estimates, but upon direct trustworthy declarations from men of business. In addition, we present, on the method of total index numbers, percentage calculations of changes in the level of general prices. We believe that these calculations have a good claim to approximate accuracy because of the large number of articles on which they are based; yet we are quite aware that our calculations, like others, must be used with every caution.

The Hamburg Bureau of Statistics, knowing the wide interest and great importance of the calculation of the movement of actual average prices per year of 114 important commodities during the period from 1851 to 1885, wished to present, so far as this could possibly be done, trustworthy figures and calculations. The Bureau, therefore, thought it desirable to submit earlier results, as they had been published in the annual tabular statements of the trade of Hamburg, and had been printed in our first edition, to a thorough and detailed revision. The result has been that changes proved necessary or desirable only for occasional articles in single years; and such changes as were made, barring a few exceptional cases, were fairly to be considered irrelevant. For the sake of exactness, however, they have been used in this new and final compilation of the Hamburg prices, and will serve to explain variations from the figures of earlier publications.

The prices of various agricultural and animal products are perhaps not to be considered authoritative for wholesale trade in so high a degree as those for other articles. We therefore add a statement of the average prices of certain commodities of this kind in Prussia during the period from 1861 to 1885, obtained from the Zeitschrift d. Kgl. Preuss. Statistischen Bureaus, 1886, Heft I, II, besondere Beilage, p. 80.

[Per 100 kilograms.]

Years.	Wheat.	Rye.	Barley.	Oats.	Potatoes.	Beef.	Pork.
	Marks.	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
1861–'65	18.82	13.78	12.12	11.82	4.58	0.82	0.96
1866–'70	22.02	17.16	15.48	15.08	4.96	0.92	1.11
1871–'75	23.52	17.92	17.08	16.32	6.04	1.15	1.26
1876–'80	21 14	16.62	16.20	15.24	6.06	1.15	1.24
1881–'85	18.96	16.00	15.16	14.58	5.26	1.18	1.25
1881	22.00	20.20	16.60	15.90	5.70	1.14	1.28
1882	20.80	16.10	15.40	14.60	4.95	1.16	1.28
1883	18.50	14.70	14.60	13.70	6.15	1.20	1.28
1884	17.30	14.70	14.90	14.40	4.90	1.20	1.20
1885	16.20	14.30	14.30	14.30	4.60	1.19	1.20

It goes without saying that we do not mean to add comments on the fluctuations or permanent changes in the prices of the different articles during the last thirty-five years. To do this, we should have to write a complete history of trade during the last decades, such as would occupy, with all possible conciseness, too much space for the present publication. But remarks on certain particularly noticeable changes in the prices of important articles will be found at the close of the tables.

Average prices of 100 *articles at Hamburg during the period from* 1851 *to* 1885, *compared to the average prices of the years* 1847–'50, *with corresponding index numbers, as ascertained by the Bureau of Trade Statistics at Hamburg.*

I.—PRODUCTS OF AGRICULTURE.

Years.	(1) Wheat.		(2) Wheat flour.		(3) Rye.		(4) Rye flour.		(5) Oats.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847–'50	19.44	100.00	28.92	100.00	12.24	100.00	14.85	100.00	11.16	100.00
1851	16.62	85.49	25.02	86.51	13.80	112.75	16.62	111.92	14.40	129.03
1852	17.40	89.51	27.42	94.81	14.40	117.65	20.77	139.19	13.62	122.04
1853	21.06	108.33	32.82	113.49	16.56	135.29	22.32	150.30	15.54	139.25
1854	30.18	155.25	41.28	142.74	21.48	175.49	27.42	184.65	18.00	161.29
1855	31.20	160.49	45.18	156.22	23.28	190.19	30.48	205.25	17.28	154.84
1851–'55	23.28	119.75	34.32	118.67	17.88	146.08	23.55	158.59	15.78	141.40
1856	29.28	150.62	42.00	145.23	21.54	175.98	28.62	192.73	16.68	149.46
1857	22.50	115.74	33.30	115.15	15.36	125.49	27.24	183.43	15.42	138.17
1858	18.48	95.06	28.56	98.75	13.68	111.76	22.80	153.54	14.40	129.03
1859	19.68	101.23	27.48	95.02	14.04	114.71	21.96	147.88	14.34	128.49
1860	23.04	118.52	32.46	112.24	15.90	129.90	21.42	144.24	15.06	134.95
1856–'60	22.62	116.36	32.76	113.28	16.08	131.37	24.42	164.44	15.18	136.02
1861	24.60	126.54	34.92	120.75	15.66	127.94	23.88	160.81	14.64	131.18
1862	23.10	118.83	31.56	109.13	16.98	138.73	22.92	154.34	13.68	122.58
1863	19.92	102.47	26.88	92.95	15.30	125.00	19.08	128.48	11.64	104.30
1864	16.68	85.80	24.60	85.06	12.18	99.51	16.38	110.30	13.20	118.28
1865	17.28	88.89	25.50	88.17	13.62	111.27	17.88	120.40	15.42	138.17
1861–'65	20.34	104.63	28.68	99.17	14.76	120.59	20.04	134.95	13.74	123.12
1866	20.34	104.63	29.28	101.24	15.42	125.98	21.96	147.88	15.72	140.86
1867	28.44	146.30	34.98	120.95	21.30	174.02	26.34	177.37	17.10	153.23
1868	27.30	140.43	33.12	114.52	20.94	171.08	25.98	174.95	18.30	163.98
1869	20.88	107.41	30.06	103.94	17.58	143.63	21.06	141.82	17.52	156.99
1870	20.10	103.39	29.76	102.90	15.66	127.94	21.72	146.26	14.54	130.29
1866–'70	23.40	120.37	31.44	108.71	18.18	148.53	23.40	157.58	16.62	148.92
1871	23.96	123.25	31.90	110.30	18.70	152.78	21.32	143.57	15.58	139.61
1872	24.92	128.19	34.42	119.02	15.82	129.25	22.94	154.48	15.02	134.59
1873	25.94	133.44	36.52	126.28	18.16	148.37	25.16	169.43	16.50	147.85
1874	23.32	119.96	34.56	119.50	18.48	150.98	25.26	170.10	18.48	165.59
1875	20.50	105.45	28.38	98.13	16.64	135.95	22.70	152.86	17.68	158.42
1871–'75	23.72	122.02	33.16	114.66	17.56	143.46	23.48	158.11	16.66	149.28
1876	21.24	109.26	29.62	102.42	17.20	140.52	24.06	162.02	17.44	156.27
1877	24.32	125.10	31.54	109.06	17.72	144.77	23.94	161.21	16.88	151.25
1878	21.42	110.19	31.34	108.37	14.32	116.99	22.26	149.90	14.41	129.39
1879	21.36	109.88	31.46	108.78	14.50	118.46	21.50	144.78	14.06	125.99
1880	21.74	111.83	31.67	109.51	18.37	150.08	25.33	170.57	14.85	133.07
1876–'80	22.02	113.27	31.13	107.61	16.42	134.15	23.42	157.71	15.53	139.16
1881	22.21	114.25	33.32	115.21	19.76	161.44	25.66	172.79	15.75	141.13
1882	20.43	105.09	32.03	110.75	16.07	131.29	21.09	142.02	15.52	139.07
1883	18.66	95.99	28.87	99.80	14.48	118.30	17.97	121.01	13.74	123.12
1884	16.78	86.32	24.50	84.72	13.97	114.13	18.02	121.35	13.74	123.12
1885	15.33	78.86	22.67	78.39	12.21	99.75	16.82	113.27	13.79	123.57
1881–'85	18.68	96.09	28.28	97.79	15.30	125.00	19.91	134.07	14.51	130.02

Average prices of 100 *articles at Hamburg, etc.*—Continued.

I.—PRODUCTS OF AGRICULTURE—Continued.

Years.	(6) Barley.		(7) Malt.		(8) Buckwheat.		(9) Peas.		(10) Beans.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847-'50	14.34	100.00	20.16	100.00	12.84	100.00	12.90	100.00	21.24	100.00
1851	12.00	83.68	14.22	70.54	10.20	79.44	11.58	89.37	26.58	125.14
1852	15.18	105.86	22.20	110.12	14.58	113.55	13.20	102.33	26.40	124.29
1853	14.82	103.35	21.36	105.95	19.48	143.93	17.46	135.35	32.34	152.26
1854	18.78	130.96	22.32	110.71	18.84	146.73	18.84	146.05	27.90	131.36
1855	18.24	127.20	29.28	145.24	18.66	145.33	18.78	145.58	33.18	156.21
1851-'55	15.78	110.04	21.90	108.63	16.14	125.70	15.96	123.72	29.28	137.85
1856	19.62	136.82	30.18	149.70	18.60	144.86	14.10	109.30	27.24	128.25
1857	17.70	123.43	27.54	136.61	17.04	132.71	18.00	139.53	22.92	107.91
1858	14.82	103.35	25.02	124.11	15.06	117.29	17.82	138.14	24.00	112.99
1859	15.96	111.30	21.24	105.36	12.72	99.07	17.40	134.88	24.54	115.54
1860	16.98	118.41	21.60	107.14	15.18	118.22	17.82	138.14	25.20	118.64
1856-'60	17.04	118.83	25.14	124.70	15.72	122.43	17.04	132.09	24.78	116.67
1861	16.98	118.41	24.54	121.73	15.66	121.96	17.64	136.74	25.26	118.93
1862	16.32	113.81	22.68	112.50	14.80	115.26	17.88	138.60	24.48	115.25
1863	15.24	106.28	22.38	111.01	13.44	104.67	14.40	111.63	21.84	102.82
1864	13.32	92.89	19.74	97.92	13.80	107.48	12.90	100.00	23.16	109.04
1865	15.78	110.04	18.72	92.86	13.92	108.41	15.06	116.74	26.76	125.99
1861-'65	15.54	108.37	21.60	107.14	14.34	111.68	15.60	120.93	24.30	114.41
1866	18.90	131.80	28.08	139.29	14.82	115.42	17.64	136.74	25.92	122.03
1867	19.92	138.91	29.52	146.43	15.72	122.43	18.72	145.12	25.56	120.34
1868	21.16	147.56	27.36	135.71	18.48	143.93	20.58	159.53	27.18	127.97
1869	20.52	143.10	26.46	131.25	17.94	139.72	18.72	145.12	24.12	113.56
1870	16.20	112.87	23.40	116.07	16.56	128.97	17.40	134.88	27.36	128.81
1866-'70	19.32	134.73	26.94	133.63	16.68	129.91	18.60	144.19	26.04	122.60
1871	18.34	127.89	24.04	119.25	15.98	124.45	18.26	141.55	24.38	114.78
1872	21.90	152.72	26.58	131.85	16.14	125.70	18.96	146.98	24.82	116.85
1873	22.82	159.14	28.64	142.06	17.68	137.69	22.26	172.56	38.80	135.50
1874	22.14	154.39	32.60	161.71	17.76	138.32	21.12	163.72	26.74	125.89
1875	21.84	152.30	30.00	148.81	17.04	132.71	20.68	160.31	23.76	111.86
1871-'75	21.40	149.23	28.38	140.77	16.92	131.78	20.26	157.05	25.70	121.00
1876	19.50	135.98	29.24	145.04	19.42	151.25	20.80	161.24	23.00	108.29
1877	20.94	146.02	29.82	147.92	17.86	139.10	20.12	155.97	25.36	119.40
1878	20.18	140.73	29.90	148.31	16.18	126.01	19.08	147.91	22.32	105.08
1879	21.90	152.72	28.42	140.97	17.28	134.58	19.34	149.92	24.30	114.41
1880	21.18	147.70	30.52	151.39	18.48	143.93	20.06	155.50	26.53	124.91
1876-'80	20.74	144.63	29.58	146.73	17.84	138.94	19.88	154.11	24.30	114.41
1881	20.89	145.68	29.84	148.02	16.47	128.27	20.89	161.94	26.12	122.98
1882	19.90	138.77	28.88	143.25	17.16	133.64	21.10	163.57	24.81	116.81
1883	17.37	121.12	28.82	142.96	21.80	169.78	18.42	142.79	25.19	118.60
1884	16.13	112.48	29.45	146.08	15.32	119.31	18.43	142.87	24.67	116.15
1885	14.29	99.65	27.72	137.50	16.27	126.71	17.68	137.05	23.62	111.21
1881-'85	17.72	123.57	28.94	143.55	17.40	135.51	19.30	149.61	24.88	117.14

Average prices of 100 *articles at Hamburg, etc.*—Continued.

I.—PRODUCTS OF AGRICULTURE—Continued.

Years.	(11) Potatoes.*		(12) Hops.		(13) Clover-seed.		(14) Rape-seed.		(15) Rape-seed oil.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847–'50	5.55	100.00	89.76	100.00	65.22	100.00	25.92	100.00	72.54	100.00
1851	4.56	82.16	134.40	149.73	73.68	112.97	22.02	84.95	63.42	87.43
1852	4.96	89.37	151.20	168.45	86.70	132.93	23.82	91.90	66.60	91.81
1853	6.47	116.58	196.08	218.45	97.14	148.94	28.68	110.15	68.16	93.96
1854	6.92	124.68	282.12	314.30	109.32	167.62	29.58	114.12	83.82	115.55
1855	7.16	129.01	216.54	241.24	112.47	172.45	43.02	165.97	106.86	147.31
1851–'55	6.01	108.29	196.08	218.45	95.88	147.01	29.40	113.43	77.76	107.20
1856	7.27	130.99	125.82	140.17	125.10	191.81	36.54	140.97	95.58	131.76
1857	5.30	95.50	129.78	144.59	116.49	178.61	33.18	128.01	96.30	132.75
1858	3.69	66.49	119.16	132.75	110.58	169.55	32.34	124.77	80.04	110.34
1859	4.16	74.95	166.26	185.23	119.67	183.49	26.64	102.78	71.58	98.68
1860	6.11	110.09	298.32	332.35	109.41	167.76	29.52	113.89	79.80	110.01
1856–'60	5.31	95.68	167.88	187.03	116.22	178.20	31.62	121.99	84.66	116.71
1861	7.62	137.30	198.90	221.59	104.40	160.07	30.42	117.36	76.44	105.38
1862	4.85	87.39	153.54	171.06	98.88	151.61	35.22	135.88	89.88	123.90
1863	4.79	86.31	203.10	226.27	95.52	146.46	31.20	120.37	85.14	117.37
1864	5.19	93.51	232.80	259.36	93.72	143.70	31.62	121.99	79.38	109.43
1865	5.25	94.60	253.44	282.35	133.32	204.42	33.60	129.63	83.28	114.81
1861–'65	5.54	99.82	208.38	232.15	105.18	161.27	32.40	125.00	82.80	114.14
1866	5.54	99.82	326.76	364.04	127.56	195.58	30.18	116.44	84.66	116.71
1867	7.04	126.95	261.72	291.58	145.80	223.55	29.82	115.05	72.36	99.75
1868	5.94	107.03	185.10	206.22	115.40	176.94	27.42	105.79	66.00	90.98
1869	5.65	101.80	164.40	183.16	98.88	151.61	31.32	120.83	69.48	95.78
1870	5.62	101.26	186.48	207.75	115.56	177.18	34.86	134.49	89.10	122.83
1866–'70	5.96	107.39	224.88	250.53	120.66	185.00	30.72	118.52	76.32	105.21
1871	6.30	113.51	288.00	320.86	131.54	201.69	36.74	141.74	80.68	111.22
1872	6.60	118.92	280.98	313.03	122.74	188.19	31.78	122.62	74.82	103.14
1873	6.59	118.74	283.24	315.55	102.34	156.92	28.04	108.18	63.84	88.01
1874	7.15	128.83	382.14	425.73	108.20	165.90	25.60	98.77	66.26	91.34
1875	6.65	119.82	289.06	322.04	112.64	172.71	29.06	112.11	65.64	90.49
1871–'75	6.66	120.00	304.68	339.44	115.50	177.09	30.24	116.67	70.24	96.83
1876	6.72	121.08	278.22	309.96	136.80	209.75	31.22	120.45	68.58	94.54
1877	7.70	138.74	252.94	280.79	139.40	213.74	33.12	127.78	74.50	102.70
1878	7.46	134.41	195.54	217.85	111.64	171.17	29.32	113.12	67.74	93.38
1879	7.90	142.34	240.88	268.36	102.54	157.22	26.54	102.39	59.46	81.97
1880	7.78	140.18	234.72	261.50	105.95	162.45	23.96	92.44	57.40	79.13
1876–'80	7.51	135.32	240.28	267.69	119.27	182.86	28.83	111.23	65.54	90.35
1881	6.25	112.61	229.41	255.58	99.04	151.85	27.94	107.80	58.62	80.81
1882	5.06	91.17	370.50	412.77	103.64	158.91	29.52	113.89	58.13	80.14
1883	6.15	110.81	464.23	517.19	130.77	200.50	30.85	119.02	71.58	98.68
1884	5.64	101.62	312.77	348.45	113.38	173.84	24.81	95.72	64.27	88.60
1885	5.47	98.56	218.11	242.99	101.43	155.52	23.39	90.24	54.09	74.57
1881–'85	5.71	102.88	319.00	355.39	109.65	168.12	27.30	105.32	61.34	84.56

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* For articles marked with an asterisk (*) the prices are those paid by Hamburg institutions (hospitals, etc.) for large purchases.

Average prices of 100 *articles at Hamburg, etc.*—Continued.

I.—PRODUCTS OF AGRICULTURE—Continued.

Years.	(16) Linseed-oil.		(17) Oil-cake.		(18) Raw sugar.		(19) Refined sugar.		(20) Spirits from grain or potatoes.		(1-20.) Total.
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per hecto.	Index No.	
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*		
1847-'50...	58.38	100.00	9.36	100.00	45.66	100.00	56.82	100.00	31.57	100.00	100.00
1851	66.42	113.77	8.22	87.82	42.60	93.30	52.02	91.55	32.35	102.47	99.00
1852	60.42	103.49	9.00	96.15	40.88	88.44	50.82	89.44	45.10	142.86	110.71
1853	61.56	105.45	10.68	114.10	46.44	101.71	56.82	100.00	52.51	166.33	128.18
1854	75.60	129.50	12.06	128.85	47.52	104.07	55.56	97.78	72.00	228.06	150.49
1855	80.10	137.20	13.86	148.08	49.74	108.94	66.54	117.11	70.25	222.52	158.82
1851-'55...	68.82	117.88	10.74	114.74	45.36	99.34	56.34	99.16	58.11	184.07	129.99
1856	78.42	134.33	13.08	139.74	64.14	140.47	77.34	136.11	66.70	211.28	149.03
1857	79.80	136.69	13.14	140.38	72.54	158.87	89.10	156.81	54.26	171.87	138.11
1858	64.38	110.28	13.32	142.31	53.04	116.16	73.68	129.67	35.37	112.04	119.92
1859	59.88	102.57	11.82	126.28	52.02	113.93	70.02	123.23	39.47	125.02	119.48
1860	59.58	102.06	10.68	114.10	53.82	117.87	67.68	119.11	46.52	147.36	133.75
1856-'60...	68.40	117.16	12.42	132.69	59.10	129.43	75.54	132.95	46.96	148.75	131.84
1861	65.10	111.51	10.62	113.46	44.58	97.63	67.14	118.16	51.04	161.67	131.46
1862	79.20	135.66	13.26	141.67	44.40	97.24	63.72	112.14	44.33	140.42	126.80
1863	86.22	147.69	12.84	137.18	44.04	96.45	62.64	110.24	39.31	124.52	120.12
1864	76.32	130.73	11.40	121.79	54.48	119.32	72.12	126.93	39.37	124.71	117.89
1865	70.44	120.66	15.12	161.54	45.36	99.34	61.74	108.66	35.58	112.70	126.48
1861-'65...	75.48	129.29	12.66	135.26	46.56	101.97	65.46	115.21	41.05	130.03	124.46
1866	80.16	137.31	12.60	134.62	43.50	95.27	63.12	111.09	36.66	116.12	137.64
1867	77.04	131.96	12.60	134.62	44.04	96.45	63.48	111.72	47.67	151.00	146.38
1868	69.18	118.50	15.90	169.87	47.28	103.55	67.14	118.16	48.98	155.15	141.59
1869	64.62	110.69	15.78	168.59	54.72	119.84	71.76	126.29	45.12	142.92	132.40
1870	66.66	114.18	16.32	174.36	51.96	113.80	68.82	121.12	39.54	125.25	131.23
1866-'70...	71.52	122.51	14.64	156.41	48.30	105.78	66.84	117.63	43.17	136.74	137.74
1871	70.10	120.09	15.10	161.32	72.98	159.83	74.40	130.94	43.12	136.59	144.76
1872	72.22	123.71	17.36	185.47	53.00	116.08	75.86	133.51	43.92	139.12	144.17
1873	69.96	119.84	15.08	161.11	51.24	112.22	70.38	123.86	46.52	147.36	148.21
1874	63.28	108.39	14.82	158.33	50.36	110.29	64.98	114.36	46.65	147.77	150.99
1875	53.80	92.15	16.08	171.79	46.30	101.40	62.06	109.22	36.23	114.76	138.16
1871-'75 ..	65.88	112.85	15.68	167.52	54.78	119.97	69.54	122.39	43.40	137.79	144.90
1876	56.16	96.20	16.28	173.93	47.88	104.86	61.14	107.60	34.87	110.45	141.06
1877	61.60	105.52	16.06	171.58	56.38	123.48	68.98	121.40	38.30	121.32	145.34
1878	59.10	101.23	16.94	180.98	55.58	121.73	61.30	107.88	39.55	125.28	132.50
1879	57.84	99.08	15.46	165.17	51.24	112.22	57.56	101.30	40.37	127.87	132.92
1880	60.05	102.86	15.06	160.90	51.21	112.16	60.33	106.18	46.05	145.87	138.11
1876-'80...	58.95	100.98	15.96	170.51	52.46	114.89	61.86	108.87	40.73	129.01	138.12
1881	58.06	99.45	15.53	165.92	50.57	110.75	59.50	104.72	46.97	148.78	137.50
1882	54.81	93.88	14.94	159.62	49.37	108.13	58.02	102.11	39.20	124.17	138.45
1883	49.93	85.53	13.98	149.36	46.57	101.99	55.85	98.29	41.57	131.68	143.33
1884	46.01	78.81	13.25	141.56	36.66	80.29	46.79	82.35	87.62	119.16	123.85
1885	49.55	84.87	12.22	130.56	26.59	58.23	38.82	68.32	33.28	105.26	110.75
1881-'85...	51.67	88.51	13.98	149.36	41.95	91.87	51.80	91.17	39.72	125.82	130.77

Average prices of 100 *articles at Hamburg, etc.*—Continued.

II.—ANIMAL AND FISH PRODUCTS.

Years.	(21) Beef.*		(22) Veal.*		(23) Mutton.*		(24) Pork.*		(25) Milk.*	
	Per kilo.	Index No.	Per kilo.	Index No.	Per kilo.	Index No.	Per kilo.	Index No.	Per liter.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847–'50	.72	100.00	.81	100.00	.93	100.00	.86	100.00	.07	100.00
1851	.64	88.89	.70	86.42	.95	102.15	.99	115.12	.067	95.71
1852	.58	80.56	.64	79.01	.95	102.15	.99	115.12	.067	95.71
1853	.62	86.11	.72	88.89	.95	102.15	.99	115.12	.067	95.71
1854	.65	90.28	.74	91.36	.95	102.15	.99	115.12	.067	95.71
1855	.79	109.72	.86	106.17	.95	102.15	1.10	127.91	.067	95.71
1851–'55	.65	90.28	.72	88.89	.95	102.15	1.04	120.93	.07	100.00
1856	.76	105.56	.83	102.47	.95	102.15	1.06	123.26	.067	95.71
1857	.72	100.00	.82	101.23	.95	102.15	1.01	117.44	.067	95.71
1858	.72	100.00	.82	101.23	.95	102.15	.96	111.63	.067	95.71
1859	.65	90.28	.74	91.36	.95	102.15	.90	104.65	.067	95.71
1860	.62	88.11	.72	88.89	.95	102.15	.94	109.30	.067	95.71
1856–'60	.69	95.83	.79	97.53	.95	102.15	.97	112.79	.07	100.00
1861	.69	95.83	.74	91.36	.95	102.15	.94	109.30	.06	85.71
1862	.79	109.72	.82	101.23	1.05	112.90	1.05	122.09	.07	100.00
1863	.77	106.94	.79	97.53	1.06	113.98	1.05	122.09	.06	85.71
1864	.80	111.11	.83	102.47	1.06	13.98	1.05	122.09	.06	85.71
1865	.88	122.22	1.02	125.93	.83	89.25	1.05	122.09	.11	157.14
1861–'65	.79	109.72	.84	103.70	.99	106.45	1.03	119.77	.07	100.00
1866	.96	133.33	1.04	128.40	1.00	107.53	.97	112.79	.10	142.86
1867	1.02	141.67	1.04	128.40	.99	106.45	.93	108.14	.10	142.86
1868	.98	136.11	1.07	132.10	1.01	108.60	1.01	117.44	.11	157.14
1869	1.00	138.89	1.05	129.63	1.05	112.90	1.12	130.23	.11	157.14
1870	1.00	138.89	1.02	125.93	1.11	119.35	1.05	122.09	.10	142.86
1866–'70	.99	137.50	1.04	128.40	1.03	110.75	1.02	118.60	.10	142.86
1871	1.08	150.00	1.11	137.04	1.18	126.88	.93	108.14	.10	142.86
1872	1.10	152.78	1.24	153.09	1.49	160.22	1.07	124.42	.12	171.43
1873	1.22	169.44	1.24	153.09	1.08	116.13	1.18	137.21	.12	171.43
1874	1.19	165.28	1.38	170.37	1.22	131.18	1.095	127.33	.12	171.43
1875	1.17	162.50	1.205	148.77	1.31	140.86	1.17	136.05	.14	200.00
1871–'75	1.15	159.72	1.24	153.09	1.26	135.48	1.09	126.74	.12	171.43
1876	1.23	170.83	1.44	177.78	1.52	163.44	1.09	126.74	.13	185.71
1877	1.25	173.61	1.52	187.65	1.49	160.22	1.10	127.91	.14	200.00
1878	1.245	172.92	1.45	179.01	1.45	155.91	1.02	118.60	.14	200.00
1879	1.14	158.33	1.38	170.37	1.40	150.54	1.00	116.28	.13	185.71
1880	1.21	168.06	1.41	174.07	1.43	153.76	1.14	132.56	.12	171.43
1876–'80	1.22	169.44	1.44	177.78	1.46	156.99	1.07	124.42	.13	185.71
1881	1.09	151.39	1.46	180.25	1.45	155.91	1.24	144.19	.12	171.43
1882	1.18	163.89	1.47	181.48	1.51	162.37	1.16	134.88	.12	171.43
1883	1.19	165.28	1.51	186.42	1.62	174.19	1.09	126.74	.12	171.43
1884	1.16	161.11	1.52	187.65	1.46	156.99	1.01	117.44	.12	171.43
1885	1.08	150.00	1.50	185.19	1.32	141.94	1.01	117.44	.12	171.43
1881–'85	1.14	158.33	1.49	183.95	1.47	158.06	1.10	127.91	.12	171.43

Average prices of 100 *articles at Hamburg, etc.*—Continued.

II.—ANIMAL AND FISH PRODUCTS—Continued.

Years.	(26) Butter.*		(27) Cheese.		(28) Tallow.		(29) Lard.		(30) Hides.	
	Per kilo.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847–'50	1.20	100.00	79.68	100.00	82.14	100.00	93.12	100.00	83.35	100.00
1851	1.22	101.67	78.42	98.42	70.20	85.46	100.62	108.05	89.39	107.25
1852	1.22	101.67	82.20	103.16	78.18	95.18	106.38	114.24	84.21	101.03
1853	1.54	128.33	91.92	115.36	97.68	118.92	115.20	123.71	102.66	123.17
1854	1.67	139.17	101.58	127.48	118.20	143.90	116.22	124.81	109.17	130.98
1855	1.74	145.00	107.40	134.79	108.18	131.70	117.00	125.64	112.51	134.99
1851–'55	1.45	120.83	92.28	115.81	94.50	115.05	111.06	119.27	97.68	117.19
1856	1.93	160.83	104.52	131.17	103.68	126.22	121.92	130.93	129.02	154.79
1857	1.86	155.00	108.66	136.37	108.60	132.21	126.18	135.50	173.21	207.81
1858	1.95	162.50	104.46	131.10	95.70	116.51	104.76	112.50	118.08	141.67
1859	1.84	153.33	103.50	129.89	105.78	128.78	103.56	111.21	134.79	161.72
1860	1.99	165.83	107.76	135.24	107.22	130.53	112.98	121.33	143.09	171.67
1856–'60	1.91	159.17	105.78	132.76	104.22	126.88	113.88	122.29	142.50	170.97
1861	1.71	142.50	98.92	124.15	102.96	125.35	107.16	115.08	120.12	144.12
1862	1.66	138.33	98.10	123.12	92.82	113.00	88.86	95.43	115.62	138.72
1863	1.56	130.00	108.30	135.92	82.14	100.00	75.78	81.38	103.18	123.79
1864	1.80	150.00	103.02	129.29	78.36	95.40	97.56	104.77	106.34	127.58
1865	1.95	162.50	105.48	132.38	83.10	101.17	134.46	144.39	99.60	119.50
1861–'65	1.74	145.00	102.72	128.92	87.90	107.01	100.74	108.18	108.97	130.74
1866	1.91	159.17	111.18	139.53	82.38	100.29	118.80	127.58	99.48	119.85
1867	1.76	146.67	114.96	144.28	92.34	112.42	104.10	111.79	103.38	124.03
1868	2.17	180.83	109.02	136.82	89.70	109.20	124.02	133.18	115.80	138.93
1869	2.14	178.33	115.68	145.18	89.40	108.84	129.72	139.30	105.00	125.97
1870	1.88	156.67	110.16	138.25	88.56	107.83	125.16	134.41	112.38	134.83
1866–'70	1.97	164.17	112.20	140.81	88.50	107.74	120.36	129.25	107.22	128.64
1871	2.04	170.00	114.20	143.32	87.90	107.01	102.50	110.07	129.96	155.92
1872	1.99	165.83	128.40	161.14	86.50	105.31	80.82	86.79	151.56	181.84
1873	2.28	190.00	128.32	161.05	84.22	102.53	86.52	92.91	156.48	187.74
1874	2.59	215.83	126.84	159.18	82.46	100.39	105.96	113.79	148.72	178.43
1875	2.40	200.00	127.56	160.00	87.02	105.95	122.18	131.21	136.28	163.50
1871-'75	2.26	188.33	125.06	156.95	85.62	104.24	99.60	106.96	144.60	173.49
1876	2.61	217.50	128.28	160.09	87.92	107.04	111.80	120.06	111.60	133.89
1877	2.34	195.00	139.04	174.50	85.92	104.60	97.92	105.15	112.94	135.50
1878	2.19	182.50	123.16	154.57	81.70	99.46	78.04	83.81	104.68	125.59
1879	2.02	168.33	115.96	145.53	70.98	86.41	72.74	78.11	104.24	125.06
1880	2.32	193.33	120.25	150.92	69.60	84.73	84.08	90.29	116.90	140.25
1876–'80	2.30	191.67	125.34	157.30	79.22	96.45	88.92	95.49	110.07	132.06
1881	2.41	200.83	122.42	153.64	73.83	89.88	112.12	120.40	119.23	143.05
1882	2.40	200.00	114.18	143.30	87.04	105.97	116.72	125.34	116.82	140.16
1883	2.30	191.67	117.74	147.77	89.81	109.34	98.97	106.28	117.14	140.54
1884	2.28	190.00	114.92	144.23	75.88	92.38	80.25	86.18	117.26	140.68
1885	2.12	176.67	103.77	130.23	69.81	84.99	67.95	72.97	117.80	141.33
1881–'85	2.30	191.67	114.61	143.84	79.27	96.50	95.20	102.24	117.65	141.15

Average prices of 100 *articles at Hamburg, etc.*—Continued.

II.—ANIMAL AND FISH PRODUCTS—Continued.

Years.	(31) Calf-skins.		(32) Leather.		(33) Horse-hair.		(34) Bristles.		(35) Feathers.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847-'50	156.00	100.00	263.38	100.00	276.48	100.00	354.06	100.00	160.50	100.00
1851	162.60	104.23	302.86	114.99	376.20	136.07	412.62	116.54	174.18	108.52
1852	139.38	89.35	305.96	116.17	291.60	105.47	426.00	120.32	185.22	115.40
1853	167.10	107.12	264.47	100.41	377.70	136.61	494.82	139.76	186.54	116.22
1854	211.44	135.54	285.58	108.48	338.88	122.57	625.56	176.68	168.24	104.82
1855	203.46	130.42	338.17	128.40	263.88	95.44	485.16	137.03	188.76	117.61
1851-'55	176.82	113.35	316.90	120.32	329.64	119.23	489.18	138.16	180.60	112.52
1856	239.58	153.58	371.89	141.20	417.48	151.00	422.16	119.23	184.02	114.65
1857	294.06	188.50	428.97	162.87	457.38	165.43	484.86	136.94	180.00	112.15
1858	207.00	132.69	370.11	140.52	387.84	140.28	443.04	125.13	175.26	109.20
1859	280.74	179.96	414.12	157.23	416.04	150.69	448.50	126.67	178.32	111.10
1860	313.08	200.69	437.81	166.23	400.80	144.97	634.02	179.07	164.28	102.36
1856-'60	266.88	171.08	410.32	155.79	416.04	150.48	486.54	137.42	176.40	109.91
1861	239.82	153.73	370.22	140.56	340.38	123.11	475.50	134.30	165.72	103.25
1862	225.00	144.23	405.34	153.90	338.22	122.33	466.62	131.79	175.08	109.08
1863	250.32	160.46	409.73	155.57	346.14	125.20	372.06	105.08	165.30	102.99
1864	275.28	176.46	437.41	166.08	321.90	116.43	532.92	150.52	156.54	97.53
1865	265.98	170.50	429.00	162.88	303.00	109.59	503.64	142.25	172.44	107.44
1861-'65	251.28	161.08	410.34	155.80	329.94	119.34	470.16	132.79	167.04	104.07
1866	243.30	155.96	485.13	184.19	272.10	98.42	555.18	156.80	174.18	108.52
1867	250.56	160.62	354.31	134.52	344.10	124.46	501.06	141.52	168.48	104.97
1868	257.10	164.81	293.99	111.62	372.84	134.85	423.48	119.61	178.32	111.10
1869	249.00	159.62	335.44	127.36	439.50	158.96	442.50	124.98	185.82	115.78
1870	249.24	159.77	339.13	128.76	414.06	149.76	549.90	155.31	217.14	135.29
1866-'70	249.84	160.15	361.60	137.29	368.52	133.29	494.40	139.64	184.80	115.14
1871	267.22	171.29	315.54	119.80	546.46	197.65	565.10	159.61	211.56	131.81
1872	300.16	192.41	365.94	138.94	451.92	163.45	730.92	206.44	216.72	135.03
1873	298.46	191.32	334.28	126.92	427.26	154.53	819.90	231.57	245.52	152.97
1874	270.70	173.53	390.72	148.35	363.92	131.63	725.42	204.89	245.10	152.72
1875	240.56	154.21	305.74	116.08	400.62	144.90	734.14	207.35	298.36	185.89
1871-'75	275.42	176.55	342.44	130.02	438.04	158.43	715.10	201.97	243.46	151.69
1876	193.36	123.95	320.14	121.55	317.34	114.78	767.10	216.66	266.10	165.79
1877	175.58	112.55	300.68	114.16	271.42	98.17	730.12	206.21	212.32	132.29
1878	161.00	103.21	260.74	99.00	261.26	94.50	643.28	181.69	190.32	118.58
1879	175.78	112.68	264.30	100.35	248.36	89.83	704.28	198.92	210.14	130.93
1880	212.43	136.17	301.25	114.38	290.00	104.89	770.40	217.59	191.51	119.32
1876-'80	183.61	117.70	289.42	109.89	277.68	100.43	723.04	204.21	214.08	133.38
1881	195.65	125.42	314.37	119.36	266.74	96.48	762.94	215.48	185.96	115.86
1882	196.63	126.04	318.37	120.88	330.41	119.51	810.52	228.92	162.03	100.95
1883	194.80	124.87	360.17	136.75	367.85	133.05	824.99	233.01	178.74	111.36
1884	188.64	120.92	371.18	140.93	374.70	135.53	852.21	240.70	173.79	108.28
1885	190.32	122.00	330.26	125.39	346.27	125.24	748.59	211.43	161.61	100.69
1881-'85	193.21	123.85	338.87	128.66	337.19	121.96	799.85	225.91	172.43	107.43

Average prices of 100 *articles at Hamburg, etc.*—Continued.

II.—ANIMAL AND FISH PRODUCTS—Continued.

Years.	(36) Bone.		(37) Ox-horns.		(38) Mucilage.		(39) Eggs.*	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 St.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*	
1847–'50	7.98	100.00	40.80	100.00	75.18	100.00	3.48	100.00
1851	8.40	105.26	51.42	126.03	74.58	99.20	4.29	123.28
1852	8.58	107.52	55.80	136.76	72.60	96.57	4.29	123.28
1853	9.24	115.79	57.24	140.29	73.08	97.21	4.29	123.28
1854	9.54	119.55	52.26	128.09	85.74	114.05	4.29	123.28
1855	10.86	136.09	42.72	104.71	95.76	127.37	4.29	123.28
1851–'55	9.30	116.54	51.90	127.21	80.34	106.86	4.29	123.28
1856	10.68	133.83	47.04	115.29	88.80	118.12	4.29	123.28
1857	11.22	140.60	58.92	144.41	125.94	167.52	4.29	123.28
1858	10.38	130.08	69.84	171.18	122.34	162.73	4.29	123.28
1859	10.74	134.59	72.42	177.50	106.08	141.10	4.29	123.28
1860	9.18	115.04	82.26	201.62	97.62	129.85	4.29	123.28
1856–'60	10.44	130.83	66.12	162.06	108.18	143.89	4.29	123.28
1861	9.54	119.55	70.62	173.09	105.78	140.70	4.29	123.28
1862	9.54	119.55	64.80	158.82	95.16	126.58	4.83	138.79
1863	9.84	123.31	64.44	157.94	91.56	121.79	4.61	132.47
1864	9.66	121.05	59.52	145.88	87.30	116.12	4.74	136.21
1865	9.54	119.55	68.70	168.38	89.58	119.15	4.20	120.69
1861–'65	9.60	120.30	65.64	160.88	93.90	124.90	4.53	130.17
1866	9.96	124.81	71.10	174.26	88.44	117.64	4.39	126.15
1867	10.14	127.07	83.22	203.97	82.26	109.42	4.17	119.83
1868	9.06	113.53	70.74	173.38	87.72	116.68	4.38	125.86
1869	11.76	146.37	96.08	235.49	126.42	168.16	4.51	129.60
1870	12.36	154.89	73.20	179.41	99.84	132.80	4.50	129.31
1866–'70	10.68	133.83	78.87	193.31	96.96	128.97	4.39	126.15
1871	12.02	150.63	69.24	169.71	107.92	143.55	4.95	142.24
1872	13.04	163.41	84.22	206.42	138.88	184.73	5.30	152.30
1873	12.78	160.15	64.64	158.43	139.60	185.69	5.74	164.94
1874	14.06	176.19	74.94	183.68	126.64	168.45	5.55	159.48
1875	15.50	194.24	84.14	206.23	116.72	155.24	5.69	163.51
1871–'75	13.48	168.92	75.44	184.90	125.96	167.54	5.45	156.61
1876	13.48	168.92	82.80	202.94	102.52	136.37	5.42	155.75
1877	12.80	160.40	98.02	240.25	91.64	121.89	5.25	150.86
1878	12.14	152.13	78.62	192.70	87.44	116.31	5.37	154.31
1879	10.22	128.07	77.90	190.93	91.02	121.07	5.17	148.56
1880	11.26	141.10	118.88	291.37	96.81	128.77	5.42	155.75
1876–'80	11.98	150.13	91.24	223.63	93.89	124.89	5.33	153.16
1881	11.35	142.23	116.84	286.37	92.98	123.68	5.65	162.36
1882	12.81	160.53	105.63	258.90	104.30	138.73	5.30	152.30
1883	13.58	170.18	86.36	211.67	103.78	138.04	5.33	153.16
1884	12.36	154.89	86.87	212.92	105.66	140.54	5.36	154.02
1885	10.21	127.94	85.58	209.75	108.02	143.68	5.18	148.85
1881–'85	12.06	151.13	96.26	235.93	102.95	136.94	5.36	154.02

Average prices of 100 *articles at Hamburg, etc.*—Continued.

II.—ANIMAL AND FISH PRODUCTS—Continued.

Years.	(40) Herring.		(41) Cured fish.		(42) Fish oil.		(21–42) Total.
	Per 1-1 to.	Index No.	Per 100 kilos.	Index No.	Per 1-1 to.	Index No.	
	Marks.		*Marks.*		*Marks.*		
1847–'50	20.25	100.00	30.24	100.00	60.44	100.00	100.00
1851	18.60	90.64	28.80	95.24	72.01	119.14	110.38
1852	25.96	126.51	31.20	103.17	71.62	118.50	106.68
1853	25.67	125.10	33.24	109.92	72.24	119.52	114.94
1854	25.03	121.98	37.08	122.62	76.24	126.14	121.12
1855	25.17	122.66	40.44	133.73	89.18	147.55	123.54
1851–'55	24.13	119.16	34.14	112.90	75.77	125.36	114.79
1856	27.20	132.55	37.62	124.40	88.96	147.19	127.61
1857	33.62	163.84	44.34	146.63	89.70	148.41	140.18
1858	27.81	135.53	38.70	127.98	73.07	120.90	127.02
1859	29.66	144.54	43.26	143.06	70.28	116.28	130.69
1860	26.78	130.51	39.36	130.16	67.71	112.03	133.75
1856–'60	28.90	142.72	40.68	134.52	77.61	128.41	132.31
1861	29.94	147.85	40.98	135.52	69.48	114.96	124.79
1862	27.48	135.70	52.20	172.62	78.68	130.18	127.19
1863	26.12	128.99	49.38	163.29	94.44	156.25	124.12
1864	26.11	128.94	45.00	148.81	118.59	196.21	129.21
1865	30.28	149.53	53.94	178.37	90.80	150.23	135.23
1861–'65	27.99	138.22	48.30	159.72	93.45	154.62	128.24
1866	32.31	159.56	53.04	175.40	79.48	131.50	135.64
1867	30.86	152.40	41.94	138.69	81.45	134.76	132.66
1868	30.70	151.60	43.98	145.44	71.14	117.70	133.48
1869	25.36	125.23	52.20	172.62	72.46	119.89	143.25
1870	25.57	126.27	48.84	161.51	79.12	130.91	139.32
1866–'70	27.97	138.12	48.00	258.73	76.37	126.36	136.35
1871	29.98	148.05	50.72	167.72	71.16	117.74	144.14
1872	29.03	143.36	46.94	155.22	74.62	123.46	155.82
1873	31.10	153.58	52.88	174.87	67.31	111.37	156.72
1874	31.90	157.53	51.94	171.76	66 04	109.27	157.76
1875	31.36	154.86	44.38	146.76	66.90	110.69	158.59
1871–'75	30.75	149.85	49.38	163.29	69.15	114.41	154.57
1876	33.08	163.36	56.12	185.58	65.17	107.83	155.79
1877	35.72	176.40	52.54	173.74	62.97	104.19	152.51
1878	33.15	163.70	51.28	169.58	57.77	95.58	141.53
1879	37.48	185.09	45.90	151.79	50.98	84.35	137.60
1880	32.47	160.35	39.23	129.73	49.37	81.68	147.30
1876–'80	34.37	167.50	49.01	162.07	57.06	94.41	146.76
1881	34.10	168.40	47.92	158.47	61.36	101.52	151.21
1882	35.73	176.44	57.50	190.15	67.39	111.50	155.17
1883	36.58	180.64	62.95	208.16	72.64	120.19	156.40
1884	32.27	159.36	57.26	189.35	60.61	100.28	150.26
1885	29.29	144.64	52.78	174.54	50.49	83.54	140.45
1881–'85	33.59	165.88	55.68	184.13	62.50	103.41	150.65

Average prices of 100 *articles at Hamburg, etc.*—Continued.

III.—SOUTHERN PRODUCTS.

Years.	(43) Raisins.		(44) Currants.		(45) Almonds.		(46) Prunes.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*	
1847–'50	42.72	100.00	47.94	100.00	112.56	100.00	39.60	100.00
1851	35.58	83.29	32.58	67.96	125.58	111.57	37.80	95.45
1852	34.20	80.06	50.58	105.51	124.80	110.87	32.46	81.97
1853	52.80	123.60	95.64	199.50	131.16	116.52	34.08	86.06
1854	55.08	128.93	27.48	57.32	130.56	115.99	35.46	89.55
1855	51.72	121.07	76.98	160.58	134.40	119.40	46.80	118.18
1851–'55	45.90	107.44	56.64	118.15	129.30	114.87	37.32	94.24
1856	81.24	190.17	111.36	232.29	135.66	120.52	47.94	118.79
1857	94.38	220.93	89.10	185.86	157.68	140.09	53.34	134.70
1858	62.34	145.93	48.36	100.88	128.70	114.34	40.02	101.06
1859	58.86	137.78	46.98	98.00	111.36	98.93	44.40	112.12
1860	54.72	128.09	41.46	86.48	110.22	97.92	40.98	103.48
1856–'60	70.32	164.61	67.44	140.68	128.70	114.34	45.18	114.09
1861	52.62	123.17	40.08	83.60	117.12	104.05	43.02	108.64
1862	51.00	119.38	38.28	79.85	107.70	95.68	36.48	92.12
1863	54.90	128.51	38.64	80.60	117.30	104.21	39.54	99.85
1864	49.56	116.01	38.28	79.85	121.08	107.57	42.42	107.12
1865	47.88	112.08	35.28	73.59	131.58	116.90	47.40	119.70
1861–'65	51.18	119.80	38.10	79.47	118.92	105.65	41.76	105.45
1866	63.84	149.44	37.86	78.97	155.70	138.33	53.70	135.61
1867	60.54	141.71	35.16	73.34	156.42	138.97	51.78	130.76
1868	50.64	118.54	30.42	63.45	149.82	133.10	39.36	99.39
1869	45.00	105.34	32.40	67.58	139.92	124.31	46.02	116.21
1870	58.26	136.38	45.36	94.62	146.46	130.12	37.92	95.76
1866–'70	55.68	130.34	36.24	75.59	149.64	132.94	45.78	115.61
1871	53.68	125.66	46.16	96.29	134.28	119.30	48.98	123.69
1872	52.14	122.05	45.58	95.08	118.24	105.05	53.08	134.04
1873	57.92	135.58	40.62	84.73	113.28	100.64	66.08	166.87
1874	60.38	141.34	44.52	92.87	123.72	109.91	72.92	184.14
1875	66.56	155.81	44.88	93.62	135.86	120.70	45.72	115.45
1871–'75	58.14	136.10	44.36	92.53	125.08	111.12	57.36	144.85
1876	55.24	129.31	49.82	103.92	134.86	119.81	49.68	125.45
1877	47.72	111.70	49.36	102.96	151.64	134.72	60.12	151.82
1878	37.12	86.89	34.62	72.22	167.76	149.04	52.12	131.62
1879	47.54	111.28	40.82	85.15	181.66	161.39	50.14	126.62
1880	54.83	128.35	45.03	93.93	163.53	145.28	55.28	139.60
1876–'80	48.49	113.51	43.93	91.64	159.89	142.05	53.47	135.03
1881	62.36	145.97	42.69	89.05	148.50	131.93	43.50	109.85
1882	58.76	137.55	45.88	95.70	137.31	121.99	46.21	116.69
1883	48.61	113.79	44.10	91.99	158.65	140.95	53.93	136.19
1884	41.14	96.30	35.31	73.65	142.72	126.79	38.03	96.04
1885	51.02	119.43	37.43	78.10	130.77	116.18	36.12	91.21
1881–'85	52.38	122.61	41.08	85.69	143.59	127.56	43.56	110.00

Average prices of 100 *articles at Hamburg, etc.*—Continued.

III.—SOUTHERN PRODUCTS—Continued.

Years.	(47) Olive oil.		(48) French wine, exclusive of champagne.		(49) Champagne.		(43–49) total.
	Per 100 kilos.	Index No.	Per hectol.	Index No.	Per 100 bottles.	Index No.	
	Marks.		*Marks.*		*Marks.*		
1847–'50	105.90	100.00	27.60	100.00	313.56	100.00	100.00
1851	77.82	73.48	27.83	100.83	305.39	97.39	90.00
1852	96.42	91.05	28.60	103.62	295.45	94.22	95.33
1853	121.56	114.79	37.69	136.56	302.39	96.44	124.78
1854	109.20	103.12	55.03	199.38	301.26	96.08	112.91
1855	100.62	95.01	77.00	278.99	316.54	100.95	142.03
1851–'55	109.32	103.23	38.11	138.08	304.06	96.97	110.43
1856	94.86	89.58	65.60	237.68	321.78	102.62	155.95
1857	108.30	102.27	79.71	288.80	352.97	112.57	169.32
1858	86.04	81.25	54.00	195.65	331.59	105.75	120.69
1859	91.56	86.46	42.63	154.45	332.45	106.02	113.40
1860	112.92	106.63	59.39	215.18	328.47	104.76	120.36
1856–'60	106.92	100.96	55.71	201.85	333.89	106.48	134.72
1861	111.28	105.08	62.89	227.86	320.23	102.13	122.08
1862	107.76	101.76	56.17	203.51	329.97	105.23	113.93
1863	103.98	98.19	52.11	188.80	328.17	104.66	114.97
1864	108.72	102.66	41.79	151.41	317.55	101.27	109.41
1865	104.28	98.47	47.65	172.64	328.20	104.67	114.01
1861–'65	107.22	101.25	50.71	183.73	324.75	103.57	114.13
1866	131.46	124.14	39.46	142.97	359.51	114.65	126.30
1867	128.82	121.64	46.45	168.30	346.14	110.39	126.44
1868	143.46	135.47	51.23	185.62	343 86	109.66	120.75
1869	111.30	105.10	49.62	179.78	347.19	110.73	115.58
1870	113.58	107.25	42.92	156.51	346.05	110.36	118.57
1866–'70	125.70	118.70	45.98	166.59	348.12	111.02	121.54
1871	107.60	101.61	48.67	176.34	370.06	118.02	122.99
1872	102.14	96.45	57.22	207.32	368.51	117.52	125.36
1873	89.70	84.70	64.08	232.17	377.48	120.39	132.15
1874	93.14	87.95	75.28	272.75	395 74	126.21	145.02
1875	98.68	93.18	59.95	217.21	387.24	123.50	131.35
1871–'75	98.26	92.79	61.26	221.93	379.98	121.18	131.50
1876	100.78	95.17	56.21	203.66	387.30	123.52	128.69
1877	108.78	102.72	70.63	255.91	388.81	124.00	140.55
1878	110.92	104.74	77.53	280.91	360.56	114.99	134.34
1879	104.06	98.26	75.40	273.19	369.40	117.81	139.10
1880	103.20	97.45	97.67	353.88	389.11	124.09	154.65
1876–'80	105.55	99.67	74.41	269.60	379.06	120.89	138.91
1881	93.59	88.38	91.96	333.19	400.12	127.61	146 57
1882	94.58	89.31	79.77	289.02	389.96	124.37	139.23
1883	85.71	80.93	83.33	301.92	410.34	130.86	142.38
1884	91.29	86.20	66.56	241.16	379.33	120.98	120.16
1885	92.52	87.37	70.41	255.11	372.62	118.84	123.78
1881–'85	91.54	86.44	78.40	284.06	390.46	124.52	134.31

Average prices of 100 *articles at Hamburg, etc.*—Continued.

IV.—TROPICAL PRODUCTS (EXCLUSIVE OF COTTON).

Years.	(50) Coffee.		(51) Cocoa.		(52) Tea.		(53) Pepper.		(54) Pimento.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks*		*Marks.*		*Marks.*		*Marks.*	
1847-'50	74.16	100.00	64.86	100.00	288.96	100.00	55.08	100.00	92.28	100.00
1851	82.20	110.84	58.02	89.45	300.00	103.82	63.00	114.38	97.98	106.18
1852	82.20	110.84	64.20	98.98	273.42	94.62	71.40	129.63	96.78	104.88
1853	93.12	125.57	67.80	104.53	296.40	102.57	82.14	149.13	107.52	116.51
1854	94.32	127.18	67.74	104.44	288.06	99.69	91.98	166 99	104.04	112.74
1855	92.10	124.19	92.10	142.00	262.68	90.91	84.42	153.27	95.58	103.58
1851-'55	88.80	119.74	69.96	107.86	284.10	98.32	78.60	142.70	100.38	108.78
1856	95.70	129.05	102.84	158.56	298.80	103.41	96.84	175.82	88.50	95.90
1857	105.54	142.31	164.94	254.30	334.62	115.80	91.38	165.90	79.44	86.09
1858	91.20	122.98	105.78	163.09	280.02	96.91	80.58	146.30	57.90	62.74
1859	106.68	143.85	106.14	163.64	335.16	115.99	83.52	151.63	58.62	63.52
1860	122.22	164.81	129.30	199.35	377.10	130.50	80.22	145.64	62.28	67.49
1856-'60	104.28	140.61	121.80	187.79	325.14	112.52	86.52	157.08	69.36	75.16
1861	123.12	166.02	115.50	178.08	295.50	102.26	75.72	137.47	53.76	58.26
1862	135.24	182.36	113.64	175.21	333.96	115.57	75.24	136.60	55.56	60.21
1863	141.06	190.21	113.82	175.49	350.28	121.22	71.88	130.50	49.74	53.90
1864	138.78	187.14	129.24	199.26	312.48	108.14	69.96	127.02	43.86	47.53
1865	130.80	176.38	119.64	184.46	288.84	99.96	65.22	118.41	47.28	51.24
1861-'65	133.80	180.42	118.38	182.52	316.20	109.43	71.58	129.96	50.04	54.23
1866	121.80	164.24	132.66	204.53	277.74	96.11	63.18	114.71	46.44	50.33
1867	109.02	147.01	118.20	182.24	341.52	118.19	64.44	116.99	37.80	40.96
1868	96.48	130.10	97.02	149.58	338.04	116.99	53.40	96.95	42.66	46.23
1869	99.12	133.66	94.62	145.88	309.00	106.94	83.52	151.63	41.82	45.32
1870	100.56	135.60	95.34	146.99	276.60	95.72	95.76	173.86	41.82	45.32
1866-'70	105.42	142.15	107.58	165.86	308.58	106.79	72.06	130.83	42.12	45.64
1871	111.79	150.70	99.94	154.09	275.06	95.19	110.18	200.04	39.82	43.15
1872	146.24	197.20	110 82	170.86	294.84	102.03	130.32	236.60	61.36	66.49
1873	177.38	239.19	96.14	148.23	280.20	96.97	143.66	260.82	55.64	60.29
1874	186.08	250.92	98.88	152.45	277.42	96.01	135.96	246.84	61.92	67.10
1875	180.68	243.64	102.86	158.59	286 22	99.05	112.52	204.28	60.04	65.06
1871-'75	160.42	216.32	101.72	156.83	282.74	97.85	126.52	229.70	55.76	60.42
1876	166.50	224.51	130.90	201.82	279.22	96.63	86.20	156.50	71.26	77.22
1877	172.18	232.17	137.38	211.81	238.16	82.42	82.96	150.62	78.64	85.22
1878	149.42	201.48	160.16	246.93	223.94	77.50	70.70	128.36	88.01	95.41
1879	136.22	183.68	197.42	304.38	250.52	86.70	72.30	131.25	95.84	193.86
1880	143.15	193.03	131.62	202.93	237.17	82.08	86.83	157.64	85.70	92.87
1876-'80	153.49	206.97	151.50	233.58	245.80	85.06	79.80	144.88	83.90	90.92
1881	124.46	167.83	137.99	212.75	216.74	75.01	105.77	192.03	91.09	98.71
1882	100.33	135.29	140.68	216.90	214.77	74.33	110.09	199.87	78.07	84.60
1883	100.19	135.10	158.77	244.79	210.18	72.74	129.35	234.84	62.77	68.02
1884	99.83	134.61	148.55	229.03	212.66	73.59	146.33	265.67	51.74	56.07
1885	91.20	122.98	160.14	246.90	206.47	71.45	152.50	276 87	49.19	53.31
1881-'85	103.20	139.16	149.23	230.08	212.16	73.42	128.81	233.86	66.57	72.14

Average prices of 100 *articles at Hamburg, etc.*—Continued.

IV.—TROPICAL PRODUCTS (EXCLUSIVE OF COTTON)—Continued.

Years.	(55) Cassia.		(56) Rice.		(57) Sago.		(58) Arrack.		(59) Rum.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847–'50	171.78	100.00	33.66	100.00	49.56	100.00	49.92	100.00	52.14	100.00
1851	202.02	117.60	27.18	80.75	46.02	92.86	48.18	96.51	52.38	100.46
1852	219.00	127.49	23.40	69.52	40.02	80.75	46.98	94.11	49.02	94.02
1853	232.44	135.31	31.68	94.12	48.36	97.58	56.88	113.94	66.18	126.93
1854	227.40	132.38	28.92	85.92	47.22	95.28	64.68	129.57	70.20	134.64
1855	223.86	130.32	32.58	96.79	53.22	107.38	83.52	167.31	77.16	147.99
1851–'55	220.92	128.61	28.74	85.38	46.98	94.79	60.06	120.31	63.00	120.83
1856	204.36	118.97	25.20	74.87	53.22	107.38	81.60	163.46	72.18	138.43
1857	254.46	148.13	24.90	73.98	51.66	104.24	79.26	158.77	88.38	169.51
1858	194.40	113.17	20.22	60.07	39.96	80.63	53.34	106.85	62.70	120.25
1859	163.38	95.11	22.08	65.60	39.84	80.39	45.12	90.38	71.58	137,28
1860	179.94	104.75	24.48	72.73	41.22	83.17	46.26	92.67	74.10	142.12
1856–'60	199.32	116.03	23.40	69.52	45.18	91.16	61.14	122.48	73.80	141.54
1861	176.34	102.65	24.66	73.26	41.22	83.17	56.22	112.62	71.10	136.36
1862	170.94	99.51	23.34	69.34	47.22	95.28	48.30	96.75	58.38	111.97
1863	180.72	105.20	22.92	68.09	43.08	86.92	61.68	123.56	60.42	115.88
1864	172.08	100.17	22.98	68.27	45.24	91.28	61.38	122.96	78.48	150.52
1865	171.54	99.86	24.78	73.62	41.28	83.29	56.82	113.82	68.04	130.49
1861–'65	174.30	101.47	23.76	70.59	43.62	88.01	56.88	113.94	67.26	129.00
1866	192.18	111.88	22.74	67.56	37.74	76.15	54.72	109.62	70.86	135.90
1867	204.60	119.11	23.88	70.94	38.16	77.00	60.96	122.12	73.14	140.28
1868	228.72	133.15	23.58	70.05	43.92	88.62	67.80	135.82	81.36	156.04
1869	260.70	151.76	19.20	57.04	43.56	87.89	76.26	152.76	89.40	171.46
1870	234.18	136.33	21.96	65.24	37.32	75.30	69.90	140.02	92.94	178.25
1866–'70	224.10	130.46	22.26	66.13	40.14	80.99	65.94	132.09	81.54	156.39
1871	213.04	124.02	22.36	66.43	36.20	73.04	60.48	121.15	81.78	156.85
1872	179.58	104.54	22.82	67.80	36.34	73.33	54.96	110.10	89.52	171.69
1873	155.94	90.78	20.42	60.67	37.52	75.71	70.74	141.71	100.56	192.87
1874	132.36	77.05	23.02	68.39	40.52	81.76	88.00	176.28	106.56	204.37
1875	112.82	65.68	19.30	57.34	38.32	77.32	84.38	169.03	95.58	183.31
1871–'75	158.74	92.41	21.58	64.11	37.78	76.23	71.72	143.67	94.80	181.82
1876	102.50	59.67	19.88	59.06	36.14	72.92	86.86	174.00	104.28	200.00
1877	99.80	58.10	21.22	63.04	39.68	80.06	87.94	176.16	108.82	208.71
1878	85.90	50.01	22.42	66.61	42.04	84.83	76.70	153.65	103.08	197.70
1879	82.78	48.19	21.02	62.45	40.82	82.36	58.20	116.59	98.22	188.38
1880	75.68	44.06	19.82	58.88	36.88	74.41	66.67	133.55	107.49	206.16
1876–'80	89.33	52.00	20.87	62.00	39.11	78.91	75.27	150.78	104.38	200.19
1881	85.33	49.67	19.75	58.67	37.87	76.41	57.76	115.71	111.32	213.50
1882	74.57	43.41	17.84	53.00	33.78	68.16	92.27	184.84	104.47	200.36
1883	68.67	39.98	19.25	57.19	29.40	59.32	48.01	96.17	112.04	214.88
1884	63.67	37.06	18.44	54.78	26.73	53.93	73.02	148.08	87.40	167.63
1885	54.40	31.67	17.37	51.60	28.57	57.65	67.38	134.98	103.79	199.06
1881–'85	69.33	40.36	18.53	55.05	31.27	63.10	67.87	135.96	103.80	199.08

Average prices of 100 *articles at Hamburg, etc.*—Continued.

IV.—TROPICAL PRODUCTS (EXCLUSIVE OF COTTON)—Continued.

Years.	(60) Tobacco.		(61) Indigo.		(62) Cochineal.		(63) Logwood.		(64) Redwood.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847–'50...	97.44	100.00	862.50	100.00	1,026.06	100.00	11.22	100.00	25.80	100.00
1851............	109.38	112.25	967.98	112.23	818.00	79.24	9.42	83.96	24.78	96.05
1852............	100.38	103.02	1,026.00	118.96	793.80	77.36	10.02	89.30	24.42	94.65
1853............	113.88	116.87	1,103.40	127.93	987.48	96.24	14.28	127.27	25.44	98.60
1854............	113.88	116.87	1,064.76	123.45	909.54	88.64	15.72	140.11	24.96	96.74
1855............	122.34	125.55	1,103.34	127.92	871.14	84.90	13.74	122.46	26.46	102.56
1851–'55...	111.96	114.90	1,053.12	122.10	874.98	85.28	12.66	112.83	25.20	97.67
1856............	145.26	149.08	1,103.40	127.93	851.88	83.02	13.98	124.60	26.58	103.02
1857............	155.34	159.42	1,316.40	152.63	812.70	79.21	12.18	108.56	33.90	131.40
1858............	125.70	129.00	1,323.00	153.39	815.76	79.50	10.32	91.98	23.16	89.77
1859............	140.94	144.64	1,325.10	153.63	786.24	76.63	10.98	97.86	25.26	97.91
1860............	144.18	147.97	1,406.82	163.11	628.38	61.24	12.06	107.49	21.78	84.42
1856–'60...	142.26	146.00	1,294.92	150.14	778.98	75.92	11.88	105.88	26.16	101.40
1861............	162.78	167.06	1,486.14	172.31	618.96	60.32	13.44	119.79	18.96	73.49
1862............	172.44	176.97	1,623.64	188.83	545.34	53.15	13.86	123.53	17.10	66.28
1863............	136.02	139.59	1,201.20	149.70	607.50	59.21	12.06	107.49	15.90	61.63
1864............	135.30	138.85	1,342.38	155.64	726.60	70.81	11.64	103.74	16.80	65.12
1865............	113.82	116.81	1,303.08	151.08	753.90	73.48	12.36	110.16	18.78	72.79
1861–'65...	144.06	147.84	1,410.30	163.51	650.46	63.39	12.66	112.83	17.52	67.91
1866............	104.52	107.27	1,460.64	169.35	797.28	77.70	13.38	119.25	20.40	79.07
1867............	116.04	119.09	1,459.74	169.25	777.96	75.82	10.62	94.65	21.72	84.19
1868............	122.04	125.25	1,568.70	181.88	875.88	85.36	13.38	119.25	24.84	96.28
1869............	139.80	153.47	1,734.12	201.06	705.84	68.79	15.42	137.43	21.36	82.79
1870............	134.94	138.49	1,742.82	202.07	630.12	61.41	13.02	116.04	16.68	64.65
1866–'70...	123.48	126.72	1,593.18	184.72	757.44	73.82	13.14	117.11	21.00	81.40
1871............	139.30	142.96	1,630.88	189.09	622.94	60.71	13.20	117.65	15.42	59.77
1872............	164.02	168.33	1,617.84	187.58	553.28	53.92	14.28	127.27	14.02	54.34
1873............	148.32	152.22	1,418.00	164.40	567.14	55.27	14.24	126.92	14.78	57.20
1874............	148.22	152.11	1,476.18	171.15	524.52	51.12	13.18	117.47	22.12	85.74
1875............	142.54	146.28	1,451.38	168.28	466.98	45.51	16.40	146.17	20.18	78.22
1871–'75...	148.48	152.38	1,518.86	176.10	546.98	53.31	14.26	127.09	17.80	67.05
1876............	147.92	151.83	1,303.34	151.11	508.84	49.59	15.58	138.86	16.66	64.57
1877............	141.78	145.50	1,314.30	152.38	569.28	55.48	14.82	132.09	15.68	60.78
1878............	134.54	138.07	1,259.22	146.00	523.16	50.99	13.76	122.64	15.86	61.47
1879............	126.84	130.17	1,246.72	144.55	576.52	56.19	14.54	129.59	16.72	64.81
1880............	136.45	140.03	1,304.74	151.27	598.36	58.32	14.66	130.66	19.66	76.20
1876–'80...	137.51	141.12	1,285.66	149.06	555.23	54.11	14.67	130.75	16.92	65.58
1881............	130.42	133.85	1,393.25	161.54	439.30	42.81	13.75	122.55	17.09	66.24
1882............	116.20	119.35	1,362.34	157.95	355.80	34.69	14.13	125.94	15.55	60.27
1883............	112.26	115.20	1,303.29	151.10	265.48	25.88	13.35	118.98	14.95	57.95
1884............	123.54	126.79	1,223.93	141.90	250.38	24.40	13.45	119.88	13.31	51.59
1885............	125.41	128.70	1,089.80	126.35	316.40	30.84	12.63	112.57	11.14	48.18
1881–'85...	121.58	124.77	1,274.52	147.77	325.49	31.72	13.45	119.96	14.41	55.85

Average prices of 100 *articles at Hamburg, etc.*—Continued.

IV.—TROPICAL PRODUCTS (EXCLUSIVE OF COTTON)—Continued.

Years.	(65) Mahogany.		(66) Cane.		(67) Palm-oil.		(68) Ivory.		(50–68) Total.
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	
	Marks.		*Marks.*		*Marks.*		*Marks.*		
1847–'50	21.90	100.00	30.96	100.00	65.46	100.00	919.26	100.00	100.00
1851	25.20	110.50	32.82	106.01	56.82	86.80	909.78	98.97	99.94
1852	25.20	110.50	32.58	105.23	58.38	89.18	975.18	106.08	99.95
1853	23.58	107.67	36.06	116.47	72.60	110.91	1,122.66	122.13	115.28
1854	24.00	109.59	31.56	101.94	95.88	146.47	1,218.90	132.60	118.17
1855	19.56	89.32	33.00	106.59	85.74	130.98	1,335.84	145.32	121.02
1851–'55	23.52	107.40	33.18	107.17	73.86	112.83	1,112.46	121.02	110.97
1856	23.88	109.44	36.00	116.28	81.60	124.66	1,398.86	151.63	123.95
1857	28.02	127.95	53.34	172.29	89.22	136.30	1,648.38	179.32	140.32
1858	20.58	93.97	49.14	158.72	76.32	116.59	1,439.10	156.55	112.76
1859	23.76	108.49	41.40	133.72	83.46	127.50	1,391.16	151.33	115.74
1860	27.12	123.84	37.74	121.90	80.46	122.91	1,372.26	149.28	120.28
1856–'60	24.66	112.60	43.50	140.50	82.20	125.57	1,448.94	157.62	122.61
1861	23.46	107.12	36.96	119.38	81.12	123.92	1,223.16	133.06	117.19
1862	19.32	88.22	42.24	136.48	75.54	115.38	1,257.54	136.80	117.28
1863	27.72	126.58	53.28	172.09	64.32	98.23	1,240.92	134.99	116.87
1864	41.58	189.86	58.44	188.76	72.36	110.54	1,503.24	163.53	125.74
1865	27.96	127.67	53.52	172.87	72.24	110.36	1,280.04	139.25	146.11
1861–'65	28.02	127.95	48.90	157.95	73.14	111.73	1,300.98	141.52	118.64
1866	26.40	120.55	50.82	164.15	77.40	118.24	1,411.62	153.56	117.90
1867	19.86	90.68	41.76	134.88	80.16	122.46	1,349.76	146.83	114.35
1868	15.96	72.88	44.04	142.25	82.08	125.39	1,343.46	146.15	116.75
1869	14.88	67.95	43.44	140.31	83.04	126.86	1,351.14	146.98	122.10
1870	22.32	101.92	44.64	144.19	79.08	120.81	1,364.16	148.40	120.56
1866–'70	19.86	90.68	44.94	145.16	80.34	122.73	1,364.04	148.38	118.32
1871	20.70	94.52	43.00	138.89	103.08	157.47	1,273.34	138.52	120.22
1872	27.18	124.11	55.12	178.04	79.10	116.25	1,510.88	164.36	130.25
1873	25.78	117.72	59.82	193.22	74.24	113.41	1,878.20	204.32	134.32
1874	22.32	101.92	59.22	191.28	70.80	108.16	1,819.66	197.95	136.74
1875	20.22	92.33	56.58	182.75	70.30	107.39	2,021.96	219.95	132.11
1871–'75	23.24	106.12	54.74	176.81	78.90	120.53	1,700.80	185.02	130.72
1876	22.76	103.93	50.56	163.31	73.96	112.99	1,897.82	206.45	129.74
1877	21.74	99.27	52.60	169.90	77.72	118.73	1,775.60	193.16	130.29
1878	18.88	86.21	49.24	159.04	77.36	118.18	1,852.88	201.56	125.61
1879	18.70	85.39	47.54	153.55	68.66	104.89	1,530.90	166.54	123.34
1880	20.66	94.34	54.73	176.78	65.19	99.59	1,496.00	162.74	122.92
1876–'80	20.55	93.84	50.93	164.50	72.58	110.88	7,710.64	186.09	126.38
1881	19.91	90.91	55.47	179.17	63.04	96.30	1,615.50	175.74	122.60
1882	21.52	98.26	56.42	182.24	63.64	97.22	1,748.77	190.24	122.47
1883	22.39	102.24	56.09	181.17	69.15	105.64	1,858.13	202.13	120.17
1884	17.40	79.45	51.42	166.09	65.90	100.67	1,920.69	208.94	117.90
1885	16.02	73.15	53.27	172.06	54.54	83.32	1,790.43	194.77	116.39
1881–'85	19.45	88.81	54.53	176.13	63.25	96.62	1,786.70	194.36	119.91

Average prices of 100 *articles at Hamburg, etc.*—Continued.

V.—MINERALS AND METALS.

Years.	(69) Coal.		(70) Pig iron.		(71) Bar iron.		(72) Steel		(73) Lead.	
	Per 1000 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847–'50	15.73	100.00	7.44	100.00	19.80	100.00	53.82	100.00	36.48	100.00
1851	13.81	87.79	5.58	75.00	16.02	80.91	49.20	91.42	36.78	100.82
1852	13.78	87.60	5.82	78.23	16.62	82.94	55.38	102.90	33.18	90.95
1853	17.91	113.86	7.92	106.45	22.20	112.12	48.12	89.41	42.22	117.11
1854	20.65	131.28	10.44	140.32	25.38	128.18	61.92	115.50	47.16	129.28
1855	19.00	120.79	9.48	127.42	22.74	114.85	77.64	144.26	51.54	141.28
1851–'55	16.95	107.76	7.86	105.65	20.58	103.94	58.44	108.58	42.30	115.95
1856	18.78	119.39	9.18	123.39	24.12	121.82	70.02	130.10	47.64	130.59
1857	17.97	114.24	8.82	118.55	24.00	121.21	69.00	128.21	46.68	127.96
1858	15.78	100.32	6.90	92.74	20.28	102.42	60.60	112.60	41.22	112.99
1859	15.63	99.36	6.54	87.90	20.28	102.42	58.14	108.03	44.28	121.38
1860	15.18	96.50	6.54	87.90	19.50	98.48	55.20	102.56	42.42	116.28
1856–'60	16.65	105.85	7.62	102.42	21.66	109.39	62.58	116.28	44.46	121.88
1861	15.93	101.27	6.18	83.06	18.42	93.03	55.86	103.79	41.64	114.14
1862	16.03	101.91	6.30	84.68	18.84	95.15	58.02	107.80	39.78	109.05
1863	15.08	95.87	7.32	98.39	19.50	98.48	67.56	125.53	39.66	108.72
1864	16.11	102.42	7.56	101.61	22.14	111.82	58.62	108.92	40.98	112.34
1865	16.35	103.94	7.38	99.19	21.54	108.79	58.50	108.70	39.06	107.03
1861–'65	15.91	101.14	6.96	93.55	20.10	101.52	59.70	110.93	40.20	110.20
1866	16.31	103.69	7.08	95.16	21.00	106.06	54.90	102.01	40.92	112.17
1867	16.02	101.84	6.96	93.55	20.22	102.12	47.52	88.29	38.16	104.61
1868	15.58	99.05	6.72	90.32	18.72	94.55	48.00	89.19	40.56	111.18
1869	15.13	96.19	6.60	88.71	18.54	93.64	48.54	90.19	39.60	108.55
1870	15.16	96.38	6.96	93.55	19.68	99.39	49.20	91.42	40.98	112.34
1866–'70	15.60	99.17	6.84	91.94	19.62	99.09	49.62	92.20	40.02	109.70
1871	15.55	98.86	7.26	97.58	21.32	107.68	58.36	108.44	39.30	107.73
1872	21.73	138.14	12.54	168.55	27.60	139.39	66.32	123.23	53.70	147.20
1873	27.46	174.57	14.36	193.01	34.24	172.98	57.12	106.13	63.08	172.92
1874	22.17	140.94	10.26	137.90	22.48	113.54	45.12	83.83	45.08	123.57
1875	18.07	114.88	8.20	110.22	23.62	19.29	39.62	73.62	50.22	137.66
1871–'75	20.65	131.28	10.52	141.40	25.86	130.61	53.30	99.03	50.28	137.83
1876	16.56	105.28	8.08	108.60	20.52	103.64	54.42	101.11	47.92	131.36
1877	15.40	97.90	7.18	96.51	18.72	94.55	48.20	89.56	44.12	120.94
1878	13.95	88.68	6.40	86.02	17.48	88.28	46.06	85.56	40.92	112.17
1879	13.10	83.28	5.72	76.88	15.76	79.60	37.66	69.97	37.30	102.25
1880	13.16	83.66	6.54	87.90	16.55	83.59	37.77	70.18	37.01	101.45
1876–'80	14.35	91.23	6.78	91.13	17.81	89.95	44.82	83.28	41.45	113.62
1881	12.67	80.55	5.94	79.84	16.01	80.86	37.15	69.03	31.15	85.39
1882	12.66	80.48	6.20	83.33	17.58	88.79	36.88	68.52	30.34	83.17
1883	12.65	80.42	5.96	80.11	16.31	82.37	34.87	64.79	28.78	78.89
1884	12.52	79.59	5.77	77.55	15.18	76.67	37.08	68.89	25.08	68.75
1885	12.31	78.26	5.14	69.09	14.26	72.02	34.41	63.94	25.89	70.97
1881–'85	12.56	79.85	5.80	77.96	15.87	80.15	36.08	67.04	28.25	77.44

Average prices of 100 *articles at Hamburg, etc.*—Continued.

V.—MINERALS AND METALS—Continued.

Years.	(74) Zinc.		(75) Tin.		(76) Copper.		(77) Quicksilver.		(78) Sulphur, raw.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*		*Marks.*	
1847–'50	31.08	100.00	160.20	100.00	171.96	100.00	836.28	100.00	13.38	100.00
1851	28.98	93.24	160.98	100.49	173.58	100.94	735.60	87.96	14.82	110.76
1852	33.42	107.53	174.18	108.73	183.42	106.66	620.22	74.16	13.38	100.00
1853	42.06	135.33	246.84	154.08	223.26	129.83	499.80	59.76	13.02	97.31
1854	42.28	142.47	237.24	148.09	232.50	135.21	436.86	52.24	10.62	79.37
1855	45.17	145.37	231.30	144.38	232.80	135.38	400.32	47.87	11.10	82.96
1851–'55	38.76	124.71	210.12	131.16	209.10	121.60	538.44	64.39	12.60	94.17
1856	49.92	157.72	266.22	166.18	240.24	139.71	387.12	46.29	10.56	78.92
1857	56.52	191.85	297.84	185.92	228.54	132.90	417.54	49.93	18.54	138.57
1858	46.80	150.58	244.38	152.55	205.50	119.50	408.00	48.79	16.44	122.87
1859	41.76	134.36	273.48	170.71	193.68	112.63	386.70	46.24	17.04	127.35
1860	39.78	127.99	276.78	172.77	204.18	118.74	443.34	53.01	20.40	152.47
1856–'60	46.80	150.58	271.74	169.63	214.44	124.70	408.54	48.85	16.62	124.22
1861	36.00	115.83	245.16	153.03	192.00	111.65	435.48	52.07	15.60	116.59
1862	35.76	115.06	238.62	148.95	189.12	109.98	444.06	53.10	13.80	103.14
1863	35.76	115.06	259.44	161.95	178.62	103.87	434.88	52.00	12.36	92.38
1864	43.14	138.80	222.96	139.18	194.88	113.33	513.36	61.39	14.70	109.87
1865	41.94	134.94	198.48	123.90	178.20	103.63	447.30	53.49	13.50	100.90
1861–'65	38.52	123.94	232.92	145.39	186.54	108.48	455.04	54.41	13.98	104.48
1866	43.86	141.12	179.88	112.28	187.02	108.76	422.82	50.56	13.62	101.79
1867	43.08	138.61	186.06	116.14	167.82	97.59	447.66	53.53	12.72	95.07
1868	40.20	129.34	192.90	120.41	153.72	89.39	417.06	49.87	12.90	96.41
1869	41.40	133.20	241.74	150.90	155.52	90.44	447.54	53.42	14.58	108.97
1870	38.76	124.71	257.88	160.97	151.14	87.89	494.70	59.15	15.00	112.11
1866–'70	41.46	133.40	211.68	132.13	163.02	94.80	445.98	53.33	13.74	102.69
1871	35.90	115.51	276.46	172.57	155.58	90.47	603.42	72.16	13.42	100.30
1872	45.90	147.68	311.42	194.39	190.02	110.50	720.18	86.12	12.78	95.52
1873	55.64	179.02	297.54	185.73	191.50	111.36	846.68	101.24	11.56	86.40
1874	46.08	148.26	212.78	132.82	177.76	103.37	1,303.30	155.87	13.80	103.14
1875	48.14	154.89	198.64	124.00	183.12	106.49	786.50	94.05	13.78	102.99
1871–'75	46.34	149.10	259.36	161.90	179.60	104.44	852.06	101.89	13.06	97.61
1876	50.90	163.77	184.50	115.17	181.60	105.61	698.98	83.58	12.00	89.69
1877	44.74	143.95	163.38	101.98	171.14	99.52	543.30	64.97	11.86	88.64
1878	45.70	147.04	146.32	91.34	151.62	88.17	450.14	53.83	12.32	92.08
1879	34.24	110.17	146.90	91.70	135.84	79.00	406.20	48.57	9.42	70.40
1880	39.85	128.22	178.42	111.27	131.82	76.66	434.09	51.91	11.83	88.42
1876–'80	43.09	138.64	163.90	102.31	154.40	89.79	506.54	60.57	11.49	85.87
1881	36.32	116.86	187.84	117.25	135.15	78.59	413.43	49.44	12.45	93.05
1882	36.38	117.05	199.87	124.76	143.23	83.29	403.65	48.27	13.35	99.78
1883	36.43	117.21	198.16	123.70	136.13	79.16	354.63	42.41	11.77	87.97
1884	34.25	110.20	179.75	112.20	124.84	72.60	374.47	44.78	11.24	84.01
1885	25.14	80.89	168.53	105.20	110.92	64.50	375.19	44.86	13.70	102.39
1881–'85	33.70	108.43	186.83	116.62	130.05	75.63	384.27	45.95	12.50	93.42

Average prices of 100 *articles at Hamburg, etc.*—Continued.

V.—MINERALS AND METALS—Continued.

Years.	(79) Saltpeter, raw, Chili.		(80) Salt.		(81) Lime.		(82) Cement.		(69–82) Total.
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	
	Marks.		*Marks.*		*Marks.*		*Marks.*		
1847–'50	25.62	100.00	4.50	100.00	3.24	100.00	4.62	100.00	100.00
1851	27.60	107.73	4.02	89.33	3.00	92.59	5.58	120.78	95.70
1852	29.40	114.75	3.00	66.67	3.00	92.59	5.82	125.97	95.76
1853	34.02	132.79	3.48	77.33	2.82	87.04	5.40	116.88	109.24
1854	33.84	132.08	3.18	70.67	3.00	92.59	5.82	125.97	115.95
1855	45.48	177.52	3.18	70.67	3.00	92.59	5.64	122.08	119.10
1851–'55	34.08	133.02	3.36	74.67	2.94	90.74	5.64	122.08	107.03
1856	30.84	120.37	3.78	84.00	3.00	92.59	5.64	122.08	116.65
1857	35.40	138.17	4.08	90.67	3.00	92.59	5.70	123.38	124.58
1858	29.82	116.39	3.78	84.00	3.00	92.59	5.46	118.18	109.04
1859	27.54	107.49	3.90	86.67	3.36	103.70	5.16	111.69	108.57
1860	25.68	100.23	3.60	80.00	3.24	100.00	5.28	114.29	108.66
1856–'60	29.88	116.63	3.84	85.33	3.12	96.30	5.46	118.18	113.59
1861	23.76	92.74	3.72	82.67	3.18	98.15	5.34	115.58	102.40
1862	27.72	108.20	3.66	81.33	3.12	96.30	5.16	111.69	101.88
1863	26.76	104.45	3.24	72.00	3.30	101.85	5.10	110.39	102.92
1864	29.28	114.29	2.16	48.00	3.12	96.30	4.86	105.19	104.53
1865	24.96	97.42	1.98	44.00	3.00	92.59	4.92	106.49	98.93
1861–'65	26.52	103.51	2.94	65.33	3.12	96.30	5.10	110.39	102.11
1866	23.10	90.16	1.74	38.67	2.76	85.19	4.80	103.90	96.54
1867	21.72	84.78	1.74	38.67	2.70	83.33	4.98	107.79	93.28
1868	24.18	94.38	2.10	46.67	2.52	77.78	4.44	96.10	91.76
1869	30.36	118.50	1.92	42.67	2.58	79.63	4.32	93.51	96.33
1870	31.38	122.48	2.40	53.33	2.82	87.04	4.38	94.81	99.68
1866–'70	26.16	102.11	1.98	44.00	2.70	83.33	4.56	98.70	95.47
1871	31.08	121.31	2.94	65.33	2.40	74.07	4.34	93.94	101.85
1872	29.68	115.85	2.74	60.89	2.40	74.07	4.68	101.30	121.63
1873	28.96	113.04	3.64	80.89	5.04	155.56	6.26	135.50	140.60
1874	23.96	93.52	3.64	80.89	3.12	96.30	5.54	119.91	116.70
1875	23.14	90.32	2.82	62.67	3.32	102.47	5.14	111.26	107.49
1871–'75	27.36	106.79	3.16	70.22	3.26	100.62	4.80	103.90	116.90
1876	23.12	90.24	3.16	70.22	3.58	110.49	5.04	109.09	106.27
1877	27.76	108.35	2.82	62.67	3.46	106.79	4.98	107.79	98.87
1878	29.76	116.16	2.52	56.00	3.58	110.49	4.72	102.16	94.14
1879	28.28	110.38	2.26	50.22	3.40	104.94	4.74	102.60	84.28
1880	30.48	118.97	2.27	50.44	2.82	87.04	4.47	96.75	88.33
1876–'80	27.88	108.82	2.61	58.00	3.37	104.01	4.79	103.68	94.35
1881	28.70	112.02	2.10	46.67	2.68	82.72	4.43	95.89	84.87
1882	26.07	101.76	2.27	50.44	3.12	96.30	4.25	91.99	86.99
1883	22.37	87.31	2.09	46.44	3.02	93.21	4.48	96.97	82.93
1884	19.25	75.14	1.97	43.78	3.04	93.83	4.33	93.72	78.69
1885	20.48	79.93	1.74	38.67	2.52	77.78	4.19	90.69	74.23
1881–'85	23.37	91.22	2.03	45.11	2.88	88.89	4.34	93.94	81.55

Average prices of 100 *articles at Hamburg, etc.*—Continued.

VI.—TEXTILE MATERIALS.

Years.	(83) Cotton.		(84) Wool.		(85) Flax.		(86) Hemp.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*	
1847–'50	111.36	100.00	360.24	100.00	94.80	100.00	71.82	100.00
1851	106.38	95.53	383.58	106.48	118.20	124.68	75.60	105.26
1852	100.38	90.14	366.60	101.77	116.22	122.59	76.02	105.85
1853	110.16	98.92	357.00	99.10	79.68	84.05	73.02	101.67
1854	90.60	81.36	377.64	104.83	74.64	78.73	101.22	140.94
1855	90.84	81.57	343.68	95.40	73.92	77.97	78.36	109.11
1851–'55	99.66	89.49	365.70	101.52	92.52	97.50	80.82	112.53
1856	108.84	97.74	394.38	109.48	85.74	90.44	68.58	95.49
1857	126.36	113.47	435.72	120.95	106.02	111.84	70.38	97.99
1858	116.28	104.42	407.28	113.06	112.20	118.35	60.78	84.63
1859	109.68	98.49	416.40	115.59	110.46	116.52	60.42	84.13
1860	102.36	91.92	432.30	120.00	134.64	142.03	64.92	90.39
1856–'60	112.68	110.19	417.24	115.82	109.80	115.82	65.04	90.56
1861	128.40	115.30	387.66	107.61	139.80	147.47	64.08	89.22
1862	236.64	212.50	417.00	115.76	142.26	150.06	66.18	92.15
1863	374.16	335.99	399.24	110.83	157.80	166.46	77.94	108.52
1864	436.02	391.54	334.20	92.77	135.30	142.72	75.42	105.01
1865	234.12	210.24	356.88	99.07	105.60	111.39	56.64	78.86
1861–'65	281.88	253.12	379.02	105.21	136.14	143.61	68.04	94.74
1866	262.14	235.40	331.14	91.92	169.32	178.61	68.70	95.66
1867	202.08	181.47	296.88	82.41	168.30	177.53	66.96	93.23
1868	155.52	139.66	312.78	86.83	167.82	177.03	75.90	105.68
1869	192.48	172.84	287.34	79.76	162.54	171.46	78.42	109.19
1870	172.02	154.47	304.44	84.51	151.56	159.87	70.08	97.58
1866–'70	196.86	176.78	306.48	85.08	163.92	172.91	72.00	100.25
1871	147.56	132.51	328.02	91.06	131.62	138.84	80.70	112.36
1872	167.22	150.16	387.38	107.53	128.44	135.49	77.28	107.60
1873	153.64	137.97	340.68	94.57	114.32	120.59	72.68	101.20
1874	148.10	132.99	301.22	83.62	115.30	121.62	79.40	110.55
1875	131.38	117.98	313.90	87.14	125.88	132.78	72.50	100.95
1871–'75	149.58	134.32	334.24	92.78	123.12	129.87	76.52	106.54
1876	111.08	99.75	270.42	75.07	119.02	125.55	68.42	95.27
1877	111.50	100.13	273.76	75.99	142.66	150.49	73.60	102.48
1878	111.24	99.89	302.28	83.91	122.52	129.24	62.66	87.25
1879	113.34	101.78	287.08	79.69	145.52	153.50	56.66	78.89
1880	122.40	109.91	284.75	79.04	90.37	95.33	57.09	79.49
1876–'80	113.91	102.29	283.66	78.74	124.02	130.82	63.69	88.68
1881	110.22	98.98	288.48	80.08	120.47	127.08	60.16	83.76
1882	111.78	100.38	260.59	72.34	111.90	118.04	59.72	83.15
1883	101.00	90.10	245.47	68.14	121.51	128.18	60.85	84.73
1884	102.91	92.41	200.72	55.72	138.86	146.48	64.99	90.49
1885	102.42	91.97	202.48	56.21	148.20	156.33	62.52	87.05
1881–'85	105.67	94.89	239.55	66.50	128.19	135.22	61.65	85.84

Average prices of 100 *articles at Hamburg, etc.*—Continued.

VI.—TEXTILE MATERIALS—Continued.

Years.	(87) Silk.		(88) Cordage.		(89) Rags.		(83–89) Total.
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	
	Marks.		*Marks.*		*Marks.*		
1847–'50	3, 863. 64	100. 00	64. 08	100. 00	30. 60	100. 00	100. 00
1851	3, 813. 78	98. 71	67. 02	104. 59	20. 22	95. 40	104. 39
1852	3, 678. 18	95. 20	73. 20	114. 23	32. 22	105. 29	105. 01
1853	3, 930. 00	101. 72	67. 14	104. 78	36. 66	119. 80	101. 43
1854	3, 271. 92	84. 68	102. 00	159. 18	40. 32	131. 76	111. 64
1855	3, 136. 15	81. 17	108. 60	169. 48	33. 78	110. 39	103. 58
1851–'55	3, 565. 98	92. 30	83. 58	130. 43	34. 44	112. 55	105. 20
1856	2, 884. 68	74. 66	77. 40	120. 79	34. 14	111. 57	100. 02
1857	3, 815. 04	98. 74	78. 84	123. 03	36. 48	119. 22	112. 18
1858	3, 408. 00	88. 21	70. 62	110. 21	32. 52	106. 27	103. 59
1859	3, 758. 04	97. 27	71. 16	111. 05	33. 60	109. 80	104. 69
1860	3, 771. 60	97. 62	70. 98	110. 77	33. 18	108. 43	108. 74
1856–'60	3, 527. 46	91. 30	73. 80	115. 17	33. 96	110. 98	107. 12
1861	3, 522. 42	91. 17	70. 56	110. 11	35. 22	115. 10	110. 85
1862	2, 913. 06	75. 40	79. 92	124. 72	30. 48	90. 61	124. 31
1863	3, 594. 36	93. 03	85. 56	133. 52	35. 04	114. 51	151. 84
1864	3, 666. 12	94. 89	77. 88	121. 54	40. 20	131. 37	154. 26
1865	3, 957. 30	102. 42	72. 42	113. 01	33. 54	109. 61	117. 80
1861–'65	3, 530. 64	91. 38	77. 28	120. 60	34. 92	114. 12	131. 83
1866	4, 137. 84	107. 10	74. 28	115. 92	36. 72	120. 00	134. 94
1867	4, 942. 14	127. 91	79. 80	124. 53	38. 28	125. 10	130. 31
1868	5, 148. 73	133. 26	84. 78	132. 30	35. 34	115. 49	127. 18
1869	4, 968. 78	128. 60	82. 44	128. 65	37. 68	123. 14	130. 53
1870	4, 540. 08	117. 51	79. 44	123. 97	37. 38	122. 16	122. 87
1866–'70	4, 747. 50	122. 88	80. 16	125. 09	37. 08	121. 18	129. 17
1871	4, 537. 74	117. 45	82. 58	128. 87	34. 74	113. 53	119. 23
1872	5, 009. 88	129. 67	84. 36	131. 65	29. 82	97. 45	122. 79
1873	5, 012. 82	129. 74	93. 16	145. 38	32. 92	107. 58	119. 58
1874	3, 784. 24	97. 94	89. 42	139. 54	31. 62	103. 33	112. 80
1875	3, 335. 02	86. 32	90. 14	140. 67	35. 02	114. 44	111. 47
1871–'75	4, 335. 94	112. 22	87. 94	137. 23	32. 82	107. 25	117. 17
1876	3, 943. 88	102. 08	85. 14	132. 87	33. 10	108. 17	105. 54
1877	4, 214. 98	109. 09	79. 96	124. 78	29. 18	95. 36	108. 33
1878	3, 415. 48	88. 40	81. 46	127. 12	30. 76	100. 52	102. 33
1879	2, 890. 84	74. 82	69. 46	108. 40	28. 84	94. 25	98. 76
1880	3, 360. 21	86. 97	77. 10	120. 46	32. 39	105. 85	96. 72
1876–'80	3, 565. 08	92. 27	78. 64	122. 72	30. 85	100. 82	102. 33
1881	3, 189. 04	82. 54	74. 32	115. 98	32. 62	106. 60	99. 29
1882	3, 026. 54	78. 33	74. 32	115. 98	29. 82	97. 45	95. 10
1883	3, 326. 14	86. 09	75. 73	118. 18	29. 23	95. 52	95. 93
1884	3, 092. 54	80. 04	78. 03	121. 77	28. 23	92. 25	97. 02
1885	2, 902. 70	75. 13	77. 65	121. 18	25. 51	83. 37	95. 89
1881–'85	3, 107. 39	80. 43	76. 01	118. 62	29. 08	95. 03	96. 65

Average prices of 100 *articles at Hamburg, etc.*—Continued.

VII.—MISCELLANEOUS ARTICLES.

Years.	(90) Guano.		(91) India-rubber.		(92) Gutta-percha.		(93) Rosin.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*	
1847–'50	19.62	100.00	265.62	100.00	193.44	100.00	8.70	100.00
1851	21.00	107.03	389.58	146.67	172.98	89.42	8.82	101.38
1852	19.02	96.94	283.20	106.62	176.58	91.28	7.80	89.66
1853	21.24	108.26	392.04	147.59	215.34	111.32	10.20	117.24
1854	23.88	121.71	393.12	148.00	244.38	126.33	10.86	124.83
1855	23.40	119.27	272.28	102.51	170.64	88.21	9.48	108.97
1851–'55	21.72	110.70	346.02	130.27	195.96	101.30	9.42	108.28
1856	23.34	118.96	228.60	86.06	173.04	89.45	9.06	104.14
1857	26.52	135.17	228.12	85.88	202.02	104.44	10.56	121.38
1858	24.54	125.08	222.42	83.74	169.02	87.38	9.66	111.03
1859	21.72	110.70	407.34	153.35	305.70	158.03	10.02	115.17
1860	24.30	123.85	452.70	170.43	304.32	157.32	9.54	109.06
1856–'60	24.06	122.63	307.86	115.90	230.82	119.32	9.78	112.41
1861	22.86	116.51	295.26	111.16	273.60	141.44	15.18	174.48
1862	25.74	131.19	337.02	126.88	284.52	147.08	41.76	480.00
1863	24.12	122.94	314.94	118.57	363.90	188.12	47.16	542.07
1864	23.46	119.57	268.32	101.02	438.96	226.92	52.62	604.83
1865	24.36	124.16	274.14	103.21	336.48	173.95	26.04	299.31
1861–'65	24.12	122.94	297.96	112.18	339.48	175.50	36.54	420.00
1866	23.46	119.57	392.76	147.87	250.26	129.37	17.76	204.14
1867	20.28	103.36	331.92	124.96	292.92	151.43	17.46	200.69
1868	20.70	105.50	350.34	131.90	274.44	141.87	12.84	147.59
1869	24.12	122.94	267.84	100.84	197.28	101.99	10.98	126.21
1870	21.54	109.79	348.06	131.04	366.18	189.30	11.34	130.34
1866–'70	22.02	112.23	338.16	127.31	276.24	142.80	14.10	162.07
1871	23.44	119.47	385.64	145.18	310.42	160.47	17.26	198.39
1872	24.60	125.38	438.54	165.10	301.12	155.67	19.20	220.69
1873	14.42	73.50	406.50	153.04	310.92	160.73	16.52	189.89
1874	14.26	72.68	332.12	125.04	296.92	153.49	13.54	155.63
1875	12.94	65.95	318.14	119.77	225.50	116.57	11.36	130.57
1871–'75	17.94	91.44	376.18	141.62	288.98	149.39	15.58	179.08
1876	15.32	78.08	324.48	122.16	345.22	178.46	11.46	131.72
1877	12.74	64.93	296.41	111.60	404.26	208.98	11.62	133.56
1878	14.58	74.31	309.70	116.60	412.52	213.25	10.28	118.16
1879	11.34	57.80	361.50	136.10	335.52	173.45	9.46	108.74
1880	12.03	61.31	500.51	188.43	289.66	149.74	10.80	124.14
1876–'80	13.20	67.28	358.53	134.98	357.44	184.78	10.72	123.22
1881	11.88	60.55	425.76	160.29	314.35	162.50	12.26	140.92
1882	15.94	81.24	455.34	171.43	290.86	150.36	12.10	139.08
1883	14.04	71.56	485.10	182.63	274.90	142.11	10.51	120.80
1884	11.99	61.11	363.29	136.77	288.35	149.06	8.66	99.54
1885	11.07	56.42	368.20	138.62	261.60	135.24	8.06	92.64
1881–'85	12.98	66.16	419.54	157.95	286.01	147.85	10.32	118.62

Average prices of 100 *articles at Hamburg, etc.*—Continued.

VII.—MISCELLANEOUS ARTICLES—Continued.

Years.	(94) Potash, prussiate and chromate of.		(95) Pitch.		(96) Potash, carbonate of		(97) Soda.	
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.
	Marks.		*Marks.*		*Marks.*		*Marks.*	
1847-'50	175.92	100.00	16.32	100.00	59.28	100.00	20.14	100.00
1851	139.70	79.41	22.80	139.71	51.78	87.35	18.42	91.46
1852	138.15	78.53	21.60	132.35	45.42	76.62	17.62	87.49
1853	150.67	85.65	18.72	114.71	49.03	82.69	18.08	89.77
1854	145.98	82.98	23.64	144.85	63.48	107.09	17.30	85.90
1855	149.29	84.86	22.50	137.87	66.96	112.96	16.67	82.77
1851-'55	145.23	82.55	21.84	133.82	55.32	93.32	17.58	87.29
1856	168.38	95.71	17.22	105.51	67.68	114.17	18.15	90.12
1857	173.47	98.61	16.32	100.00	75.96	128.14	22.30	110.72
1858	166.28	94.52	16.26	99.63	52.74	88.97	21.49	106.70
1859	204.97	116.51	18.96	116.18	55.26	93.22	21.12	104.87
1860	190.93	108.53	16.62	101.84	48.48	81.78	18.58	92.25
1856-'60	181.65	103.26	17.10	104.78	60.00	101.21	20.40	101.29
1861	166.15	94.45	22.98	140.81	54.42	91.80	16.75	83.17
1862	143.22	81.41	37.50	229.78	55.80	94.13	15.22	75.57
1863	149.24	84.83	38.34	234.93	57.06	96.25	14.75	73.24
1864	135.93	77.27	31.86	195.22	52.80	89.07	14.77	73.34
1865	119.40	67.87	20.10	123.16	52.38	88.36	15.57	77.31
1861-'65	142.65	81.09	30.18	184.93	54.48	91.90	15.38	76.37
1866	120.95	68.75	19.50	119.49	45.12	76.11	19.46	96.62
1867	107.40	61.05	16.92	103.68	45.18	76.21	18.15	90.12
1868	111.14	63.18	15.60	95.59	45.60	76.92	14.80	73.49
1869	107.42	61.06	20.22	123.90	46.86	79.05	14.10	70.01
1870	106.14	60.33	24.36	149.26	52.56	88.66	13.32	66.14
1866-'70	109.32	62.14	19.32	118.38	47.04	79.35	15.84	78.65
1871	141.28	80.31	17.54	107.48	56.02	94.50	16.32	81.03
1872	194.34	110.47	20.94	128.31	61.86	104.35	25.08	124.53
1873	181.69	103.28	21.96	134.56	66.22	111.71	19.57	97.17
1874	136.47	77.58	24.70	151.35	55.78	94.09	17.08	84.81
1875	118.82	67.54	21.96	134.56	52.10	87.89	15.16	75.27
1871-'75	150.52	85.56	21.42	131.25	58.40	98.52	18.56	92.15
1876	99.22	56.40	18.06	110.66	50.52	85.22	15.96	79.25
1877	95.05	54.03	18.06	110.66	47.46	80.06	14.52	72.10
1878	88.81	50.48	17.62	107.97	43.64	73.62	12.65	62.81
1879	116.36	66.14	14.88	91.18	36.16	61.00	12.09	60.03
1880	118.33	67.26	16.62	101.84	36.39	61.39	13.10	65.04
1876-'80	102.17	58.08	17.05	104.47	42.83	72.25	13.70	68.02
1881	120.04	68.24	15.78	96.69	39.10	65.96	12.05	59.83
1882	129.68	73.72	19.53	119.67	42.82	72.23	11.89	59.04
1883	111.34	63.29	17.88	109.56	40.71	68.67	11.06	54.92
1884	74.52	42.30	17.81	109.13	38.49	64.93	10.42	51.74
1885	99.95	56.82	11.38	69.73	34.59	58.35	8.85	43.94
1881-'85	107.11	60.89	16.48	100.98	39.14	66.02	10.85	53.87

Average prices of 100 *articles at Hamburg, etc.*—Continued.

VII.—MISCELLANEOUS ARTICLES—Continued.

Years.	(98) Tallow candles.		(99) Tar.		(100) Wax.		(90–100) Total.
	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	Per 100 kilos.	Index No.	
	Marks.		*Marks.*		*Marks.*		
1347–'50	216.60	100.00	13.86	100.00	268.08	100.00	100.00
1851	192.42	88.84	13.62	98.27	306.18	114.21	103.98
1852	184.02	84.96	12.42	89.61	300.00	111.91	95.09
1853	208.20	96.12	12.00	86.58	313.44	116.92	105.17
1854	237.18	109.50	20.64	148.92	304.98	113.76	119.44
1855	240.78	111.16	20.22	145.89	298.80	111.46	109.63
1851–'55	212.52	98.12	15.78	113.85	304.68	113.65	106.65
1856	213.00	98.34	12.24	88.31	307.44	114.68	100.50
1857	217.86	100.58	12.18	87.88	309.00	115.26	108.01
1858	205.14	94.71	11.76	84.85	321.96	120.10	99.70
1859	212.10	97.92	13.50	97.40	289.32	107.92	115.57
1860	211.08	97.45	16.62	119.91	327,48	122.16	116.83
1856–'60	211.86	97.81	13.26	95.67	311.04	116.03	108.21
1861	203.10	93.77	22.08	159.31	292.92	109.27	119.65
1862	190.56	87.98	24.06	173.59	266.22	99.31	156.99
1863	167.22	77.20	18.18	131.17	283.26	105.66	161.36
1864	145.38	67.12	14.70	106.06	342.90	127.91	162.58
1865	144.48	66,70	12.66	91.34	311.70	116.27	121.06
1861–'65	170.16	78.56	18.36	132.47	299.40	111.68	144.33
1866	154.20	71.19	11.22	80.95	295.62	110.27	111.30
1867	156.00	72.02	11.70	84.41	325.80	121.53	108.13
1868	157.62	72.77	12.60	90.91	305.64	114.01	101.25
1869	154.20	71.19	14.10	101.75	324.30	120.97	98.17
1870	148.92	68.75	15.90	114.72	308.22	114.97	111.21
1866–'70	154.20	71.19	13.08	94.37	311.94	116.36	105.90
1871	149.12	68.85	16.42	118.47	316.66	118.12	117.48
1872	145.02	66.95	18.90	136 36	204.14	76.15	128.54
1873	148.98	68.78	20.34	146.75	190.80	71.17	119.14
1874	148.94	68.76	20.32	146.61	279.48	104.25	112.21
1875	138.68	64.03	18.04	130.16	251.60	93.85	98.74
1871–'75	146.14	67.47	18.80	135.64	248.54	92.71	114.98
1876	138.24	63.82	17.14	123.67	241.70	90.16	101.78
1877	138.98	64.16	16.66	120.20	207.74	77.49	99.80
1878	132.16	61.02	14.46	104.33	233.36	87.05	97.24
1879	126.14	58.24	14.62	105.48	198.74	74.13	90.21
1880	114.13	52.69	14.63	105.56	187.88	70.08	95.23
1876–'80	129.93	59.99	15.50	111.83	213.88	79.78	96.79
1881	109.97	50.77	14.60	105.34	194.86	72.69	94.89
1882	110.42	50.98	15.18	109.52	168.46	62.84	99.10
1883	118.60	54.76	15.16	109.38	191.65	71.49	95.38
1884	119.84	55.33	12.73	91.85	190.92	71.22	84.82
1885	116.23	53.66	17.73	127.92	164.93	61.52	81.35
1881–'85	115.01	53.10	15.08	108.83	182.16	67.95	91.11

Average prices of 14 *British manufactured articles of export during the period from* 1851 *to* 1885, *compared to the average prices of the years* 1847-'50, *with the corresponding index numbers, ascertained from the values declared for the British trade statistics.*

COTTON MANUFACTURES.

Years.	(1) Cotton yarn.		(2) Piece goods, plain.		(3) Piece goods, printed.		(4) Stockings and socks.		(5) Thread for sewing.	
	Per pound.	Index No.	Per yard.	Index No.	Per yard.	Index No.	Per doz. pairs.	Index No.	Per pound.	Index No.
	d.		*d.*		*d.*		*s.*		*s.*	
1847-'50	11.20	100.00	3.10	100.00	4.37	100.00	7.85	100.00	1.89	100.00
1851	11.06	98.75	2.92	94.19	4.26	97.48	7.80	99.36	2.07	109.52
1852	10.98	98.04	2.91	93.87	4.22	96.57	7.14	90.96	2.20	116.40
1853	11.22	100.18	3.08	99.35	4.31	98.63	6.82	86.88	2.27	120.11
1854	10.92	97.50	2.85	91.94	4.20	96.11	6.35	80.89	2.27	120.11
1855	10.44	93.21	2.79	90.00	4.01	91.76	6.66	84.84	2.29	121.16
1851-'55	10.92	97.50	2.91	93.87	4.20	96.11	6.95	88.54	2.22	117.46
1856	10.62	94.82	2.88	92.90	4.06	92.91	6.11	77.83	2.17	114.81
1857	11.81	105.45	2.99	96.45	4.18	95.65	5.24	66.75	2.25	119.05
1858	11.49	102.59	2.90	93.55	4.07	93.14	6.43	81.91	2.33	123.28
1859	11.81	105.45	3.07	99.03	4.23	96.80	5.75	73.25	2.45	129.63
1860	12.00	107.14	3.09	99.68	4.21	96.34	5.93	75.54	2.35	124.34
1856-'60	11.55	103.12	2.99	96.45	4.15	94.97	5.89	75.03	2.31	122.22
1861	12.54	111.96	3.02	97.42	4.11	94.05	5.65	71.97	2.25	119.05
1862	15.97	142.59	3.66	118.06	4.57	104.58	6.36	81.02	2.71	143.39
1863	26.01	232.23	4.97	160.32	5.71	130.66	6.98	88.92	3.37	178.31
1864	28.80	257.14	5.79	186.77	6.32	144.62	8.15	103.82	3.58	189.42
1865	23.98	214.11	5.05	162.90	5.81	132.95	7.84	99.87	3.26	172.49
1861-'65	21.46	191.61	4.50	145.16	5.30	121.28	7.00	89.17	3.03	160.32
1866	23.66	211.25	5.09	164.19	5.91	135.24	8.32	105.99	3.36	177.78
1867	21.11	188.48	4.13	133.23	5.28	120.82	7.06	89.94	3.43	181.48
1868	20.27	180.98	3.67	118.39	4.83	110.53	6.63	84.46	3.37	178.31
1869	20.04	178.93	3.79	122.26	4.91	112.36	6.82	86.88	3.36	177.78
1870	18.92	168.93	3.55	114.52	4.75	108.70	6.79	86.50	3.32	175.66
1866-'70	20.80	185.71	4.05	130.65	5.14	117.62	7.12	90.70	3.37	178.31
1871	18.66	166.61	3.33	107.42	4.71	107.78	6.50	82.80	3.26	172.49
1872	18.87	168.48	3.51	113.23	4.92	112.59	7.08	90.19	3.48	184.13
1873	17.76	158.57	3.45	111.29	4.78	109.38	7.40	94.27	3.54	187.30
1874	15.79	140.98	3.22	103.87	4.69	107.32	7.09	90.32	3.53	186.77
1875	14.66	130.89	3.13	100.97	4.77	109.15	6.72	85.61	3.66	193.65
1871-'75	17.15	153.13	3.33	107.42	4.77	109.15	6.96	88.66	3.49	184.66
1876	13.19	117.77	2.83	91.29	4.48	102.52	6.59	83.95	3.66	193.65
1877	12.85	114.73	2.83	91.29	4.31	98.63	6.23	79.36	3.22	170.37
1878	12.47	111.34	2.76	89.03	4.18	95.65	6.48	82.55	3.15	166.67
1879	12.33	110.09	2.65	85.48	3.91	89.47	6.66	84.84	3.13	165.01
1880	13.25	118.30	2.73	88.06	3.79	86.73	6.55	83.44	3.17	167.72
1876-'80	12.82	114.46	2.76	89.03	4.13	94.51	6.50	82.80	3.27	173.02
1881	12.39	110.62	2.65	85.48	3.68	84.21	5.82	74.14	2.99	158.20
1882	12.96	115.71	2.71	87.42	3.73	85.35	6.21	79.11	3.10	164.03
1883	12.25	109.37	2.61	84.19	3.62	82.84	6.28	80.00	3.27	173 02
1884	12.24	109.29	2.47	79.68	3.60	82.38	6.25	79.62	3.37	178.31
1885	11.58	103.39	2.33	75.16	3.47	79.41	6.00	76.43	3.15	166.67
1881-'85	12.28	109.64	2.55	82.26	3.62	82.84	6.11	77.83	3.18	168.25

Average prices of 14 *British manufactured articles, etc.*—Continued.

COTTON MANUFACTURES—Continued.

Years.	(6) Glass, common bottles.		(7) Linen yarn.		(8) Linen, plain.		(9) Linen sail cloth and sails.		(10) Woolen and worsted yarn.	
	Per cwt.	Index No.	Per pound.	Index No.	Per yard.	Index No.	Per yard.	Index No.	Per pound.	Index No.
	s.		*d.*		*d.*		*d.*		*d.*	
1847–'50......	11.60	100.00	11.05	100.00	7.00	100.00	9.24	100.00	23.37	100.00
1851	10.60	91.38	12.12	109.68	7.02	100.29	8.94	96.75	24.29	103.94
1852	10.46	90.17	11.44	103.53	6.92	98.86	8.97	97.08	24.14	103.29
1853	10.85	93.53	12.11	109.59	7.65	109.29	10.85	117.42	25.04	107.15
1854	11.42	98.45	12.81	115.93	7.91	113.00	12.24	132.47	23.76	101.67
1855	10.89	93.88	12.32	111.49	7.59	108.43	10.85	117.42	22.90	97.99
1851–'55......	10.84	93.45	12.16	110.05	7.42	106.00	10.37	112.23	24.03	102.82
1856	11.07	95.43	13.05	118.10	7.17	102.43	10.95	118.51	24.69	105.65
1857	11.07	95.43	13.71	124.07	7.35	105.00	10.46	113.20	27.60	118.10
1858	11.11	95.78	13.08	118.37	7.34	104.86	10.45	113.10	28.58	122.29
1859	10.54	90.86	14.73	133.30	7.27	103.86	11.56	125.11	31.30	133.93
1860	10.30	88.79	13.85	125.34	7.22	103.14	10.98	118.83	32.46	138.90
1856–'60......	10.82	93.28	13.68	123.80	7.27	103.86	10.88	117.75	28.93	123.80
1861	10.16	87.59	13.91	125.88	7.16	102.29	11.89	128.68	30.13	128.93
1862	10.08	86.90	13.65	123.53	6.84	97.71	12.28	132.90	32.47	138.94
1863	10.18	87.76	15.80	142.99	7.55	107.86	12.58	136.15	36.92	157.98
1864	10.01	86.29	17.90	161.99	8.39	119.86	13.67	147.94	40.30	172.44
1865	9.97	85.95	16.54	149.68	8.06	115 14	12.73	137.77	40.31	172.49
1861–'65......	10.08	86.90	15.56	140.81	7.60	108.57	12.63	136.69	36.03	154.17
1866	10.13	87.33	16.95	153.39	8.23	117.57	12.75	137.99	41.06	175.70
1867	9.98	86.03	17.29	156.47	7.79	111.29	12.88	139.39	37.28	159.52
1868	9.93	85.60	16.91	153.03	7.50	107.14	13.39	144.91	34.78	148.82
1869	9.91	85.43	16.19	146.52	7.06	100.86	14.20	153.68	35.74	152.93
1870	9.99	86.12	14.42	130.50	7.15	102.14	12.65	136.90	33.73	144.33
1866–'70......	9.99	86.12	16.35	147.96	7.55	107.86	13.17	142.53	36.52	156.27
1871	9.71	83.71	14.69	132.94	7.39	105.57	12.94	140.04	33.49	143.30
1872	9.81	84.57	16.40	148.42	7.43	106.14	14.29	154.65	36.91	157.94
1873	10.18	87.76	16.51	149.41	7.62	108.86	13.97	151.19	37.26	159.44
1874	10.41	89.74	15.17	137.29	7.80	111.43	14.41	155.95	38.14	163.20
1875	11.08	95.52	15.95	144.34	7.59	108.43	14.36	155.41	38.58	165.08
1871–'75......	10.24	88.28	15.74	142.44	7.57	108.14	13.99	151.41	36.88	157.81
1876	11.15	96.12	15.62	141.36	7.14	102.00	14.37	155.52	34.36	147.03
1877	10.99	94.74	16.13	145.97	6.93	99.00	13.71	148.38	32.12	137.44
1878	10.71	92.33	15.76	142.62	7.20	102.86	12.96	140.26	30.07	128.67
1879	10.20	87.93	14.82	134.12	7.08	101.14	11.69	126.52	26.71	114.29
1880	10.10	87.07	14.25	128.96	7.38	105.43	12.15	131.49	30.33	129.78
1876–'80......	10.63	91.64	15.32	138.64	7.15	102.14	12.98	140.48	30.72	131.45
1881	9.92	85.52	13.91	125.88	7.03	100.43	12.01	129.98	26.04	111.42
1882	9.55	82.33	13.71	124.07	6.89	98.43	12.44	134.63	25.62	109.63
1883	9.27	79.91	14.36	129.95	6.95	99.29	11.73	126.95	23.41	100.17
1884	9.30	80.17	13.95	126.24	6.62	94.57	10.95	118.51	23.78	101.75
1885	9.57	82.50	14.26	129.05	6.35	90.71	10.83	117.21	24.19	103.51
1881–'85......	9.52	82.07	14.04	127.06	6.77	96.71	11.59	125.43	24.61	105.31

Average prices of 14 *British manufactured articles, etc.*—Continued.

WOOLEN AND WORSTED MANUFACTURES.

Years.	(11) Cloths, etc.		(12) Flannels, etc.		(13) Worsted stuffs.		(14) Carpets, etc.		(1-14) Total.
	Per yard.	Index No.	Per yard.	Index No.	Per yard.	Index No.	Per yard.	Index No.	
	d.		*d.*		*d.*		*d.*		
1847-'50	29.24	100.00	14.92	100.00	11.98	100.00	32.42	100.00	100.00
1851	24.82	84.88	14.15	94.84	9.83	82.05	35.28	108.82	97.98
1852	24.56	83.99	13.91	93.23	9.26	77.30	32.56	100.43	95.98
1853	26.10	89.26	14.62	97.99	10.52	87.81	29.60	91.30	100.61
1854	24.43	83.55	13.18	88.34	10.06	83.97	29.03	89.54	99.53
1855	26.30	89.95	15.25	102.21	9.50	79.30	30.52	94.14	98.27
1851-'55	25.24	86.32	14.22	95.31	9.83	82.05	31.40	96.85	98.47
1856	24.34	83.24	14.76	98.93	10.07	84.06	32.22	99.38	98.50
1857	24.34	83.24	16.01	107.31	10.28	85.81	33.06	101.97	101.25
1858	25.89	88.54	15.21	101.94	10.42	86.98	28.00	86.37	100.91
1859	29.09	99.49	15.35	102.88	11.02	91.99	30.88	95.25	105.77
1860	30.12	103.01	15.74	105.50	11.32	94.49	31.55	97.32	105.60
1856-'60	26.76	91.52	15.41	103.28	10.62	88.65	31.14	96.05	102.41
1861	29.81	101.95	17.80	119.30	11.99	100.08	30.01	92.57	105.84
1862	30.36	103.83	18.64	124.93	12.98	108.35	29.95	92.38	114.22
1863	34.28	117.24	19.59	131.30	12.07	100.75	31.09	95.90	133.45
1864	36.74	125.65	19.92	133.51	13.84	115.53	34.50	106.42	146.53
1865	37.70	128.93	19.55	131.03	13.76	114.86	36.00	111.04	137.80
1861-'65	33.78	115.53	19.10	128.02	12.93	107.93	32.31	99.66	127.56
1866	39.15	133.89	19.24	128.95	14.04	117.20	38.45	118.60	140.36
1867	40.99	140.18	18.54	124.26	14.54	121.37	39.62	122.21	133.91
1868	36.66	125.38	18.17	121.78	13.99	116.78	35.59	109.78	127.56
1869	36.37	124.38	17.68	118.50	14.52	121.20	36.45	112.43	128.15
1870	35.17	120.28	17.28	115.82	14.03	117.11	35.67	110.02	122.68
1866-'70	37.67	128.83	18.18	121.85	14.22	118.70	37.16	114.62	130.53
1871	37.52	128.32	17.55	117.63	14.02	117.03	36.10	111.35	122.64
1872	41.19	140.87	17.65	118.30	14.54	121.37	38.93	120.08	130.07
1873	41.00	140.22	18.10	121.31	12.11	101.09	38.64	119.19	128.52
1874	39.53	135.19	19.76	132.44	10.93	91.24	38.60	119.06	126.06
1875	39.09	133.69	18.47	123.79	10.64	88.81	37.00	114.13	124.96
1871-'75	39.67	135.67	18.31	122.72	12.45	103.92	37.85	116.75	126.44
1876	38.25	130.81	17.52	117.43	9.90	82.64	34.75	107.19	110.23
1877	35.72	122.16	17.58	117.83	9.52	79.47	31.52	97.22	114.04
1878	34.53	118.09	16.86	113.00	9.28	77.46	30.44	93.80	111.03
1879	31.89	109.06	16.59	111.19	8.90	74.29	28.83	88.93	105.93
1880	32.34	110.60	16.45	110.25	9.15	76.38	29.16	89.94	108.15
1876-'80	34.55	118.16	17.00	113.94	9.35	78.05	30.94	95.43	111.70
1881	32.55	111.32	15.18	101.74	9.04	75.46	28.78	88.77	103.08
1882	34.18	116.89	15.13	101.41	9.65	80.55	28.14	86.80	104.72
1883	38.30	130.98	14.82	99.33	9.94	82.97	28.24	87.11	104.72
1884	41.42	141.66	13.98	93.70	9.64	80.47	26.16	80.69	103.86
1885	40.23	137.59	13.08	87.67	9.35	78.05	25.74	79.40	100.48
1881-'85	37.34	127.70	14.44	96.78	9.52	79.47	27.41	84.55	103.28

Index numbers of the average prices of the 114 *articles, and of each of the* 8 *groups of articles, during the period from* 1851 *to* 1885, *compared to the average prices of the years* 1847–'50.

Years.	Products of agriculture, etc.	Animal and fish products.	Southern products, etc.	Tropical products.	Minerals and metals.	Textile materials.	Miscellaneous.	British articles of export.	Total.
1847–'50	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1851	99.02	110.38	90.00	99.94	95.70	104.39	103.98	97.98	100.21
1852	110.71	106.68	95.33	99.95	95.76	105.01	95.09	95.98	101.69
1853	128.18	114.94	124.78	115.28	109.24	101.43	105.17	100.61	113.69
1854	150.49	121.12	112.91	118.17	115.95	111.64	119.44	99.53	121.25
1855	158.82	123.54	142.03	121.02	119.10	103.58	109.63	98.27	124.23
1851–'55	129.99	114.79	110.43	110.97	107.03	105.20	106.65	98.47	112.22
1856	149.03	127.61	155.95	123.95	116.65	100.02	100.50	98.50	123.27
1857	138.11	140.18	169.32	140.32	124.58	112.18	108.01	101.25	130.11
1858	119.92	127.02	120.69	112.76	109.04	103.59	99.70	100.91	113.52
1859	119.48	130.69	113.40	115.74	108.57	104.69	115.57	105.77	116.34
1860	133.75	133.75	120.36	120.28	108.66	108.74	116.83	105.60	120.98
1856-'60	131.84	132.31	134.72	122.61	113.59	107.12	108.21	102.41	120.91
1861	131.46	124.79	122.08	117.19	102.40	110.85	119.65	105.84	118.10
1862	126.80	127.19	113.93	117.28	101.88	124.31	156.99	114.22	122.65
1863	120.12	124.12	114.97	116.87	102.92	151.84	161.36	133.45	125.49
1864	117.89	129.21	109.41	125.74	104.53	154.26	162.58	146.53	129.28
1865	126.48	135.23	114.01	116.11	98.93	117.80	121.06	137.80	122.63
1861–'65	124.46	128.24	114.13	118.64	102.11	131.83	144.33	127.56	123.59
1866	137.64	135.64	126.30	117.90	96.54	134.94	111.30	140.36	125.85
1867	146.38	132.68	126.44	114.35	93.28	130.31	108.13	133.91	124.44
1868	141.59	133.48	120.75	116.75	91.76	127.18	101.25	127.56	121.99
1869	132.40	143.25	115.58	122.10	96.33	130.52	98.17	128.15	123.38
1870	131.23	139.32	118.57	120.56	99.68	122.87	111.21	122.68	122.87
1866–'70	137.74	136.35	121.54	118.32	95.47	120.17	105.90	130.55	123.57
1871	144.76	144.14	122.99	120.22	101.85	119.23	117.48	122.64	127.03
1872	144.17	155.82	125.36	130.25	121.63	122.79	128.54	130.07	135.62
1873	146.21	156.72	132.15	134.82	140.60	119.58	119.14	128.52	138.28
1874	150.99	157.76	145.02	136.74	116.70	112.80	112.21	126.06	136.20
1875	138.16	158.59	131.35	132.11	107.49	111.47	98.74	124.96	129.85
1871–'75	144.90	154.57	131.50	130.72	116.90	117.17	114.98	126.44	133.29
1876	141.06	155.79	128.69	129.74	196.27	105.54	101.78	119.23	128.33
1877	145.34	152.51	140.55	130.29	98.87	108.33	99.80	114.04	127.70
1878	132.50	141.53	134.34	125.61	94.14	102.33	97.24	111.03	120.60
1879	132.92	137.60	139.10	123.34	84.28	98.76	90.21	105.93	117.10
1880	138.11	147.30	154.65	122.92	88.33	96.72	95.23	108.15	121.89
1876–'80	138.12	146.76	138.91	126.38	94.35	102.33	96.79	111.70	123.07
1881	137.50	151.21	140.57	122.60	84.87	99.29	94.89	103.08	121.07
1882	138.45	155.17	139.23	122.47	86.99	95.10	99.10	104.72	122.14
1883	143.33	156.40	142.38	120.17	82.93	95.93	95.38	104.72	122.24
1884	123.85	150.26	120.16	117.90	78.69	97.02	84.82	103.36	114.25
1885	110.75	140.45	123.78	116.39	74.23	95.89	81.35	100.48	108.72
1881–'85	130.77	150.65	134.41	119.91	81.55	96.65	91.11	103.28	117.68

NOTES TO THE TABLES OF AVERAGE PRICES.

Wheat.—The average yearly price during the period 1851–'85 varied from 31.20 marks in 1855 to 15.33 in 1885. The average price for periods of five years varied between 23.72 marks in the years 1871–'75 and 16.68 marks in the years 1881–'85. The price in 1885 was lower by 4.11 marks (21 per cent.) than in the years 1847–'50. It was lower by 8.39 marks (35 per cent.) than in the years 1871–'75.

Rye.—The price varied from 23.28 marks in 1855 to 12.21 marks in 1885. The five-year period price varied from 18.18 marks in 1866–'70 to 15.30 marks in 1881–'85. The price in 1885 was lower by 0.03 marks (¼ per cent.) than in 1847–'50, and was lower by 5.35 marks (30 per cent.) than in 1871–'75.

Potatoes.—The price varied from 7.90 marks in 1879 to 3.69 marks in 1858. The five-year period price varied from 7.51 marks in 1876–'80 to 5.31 marks in 1856–'60. The price in 1885 was lower by 0.08 marks (1 per cent.) than in 1847–'50, and was lower by 1.19 marks (18 per cent.) than in 1871–'75. When the potato crop is poor, an increase in the import of Indian corn for the manufacture of spirits prevents an excessive rise in the price of potatoes.

Hops.—No commodity shows such enormous fluctuations in price as hops. The price varied from 464.23 marks in 1883 to 119.16 in 1858. The five-year period price varied from 319 marks in 1881–'85, to 167.88 marks in 1856–'60. The price in 1885 was higher by 128.35 marks (143 per cent.) than in 1847–'60, and it was lower by 86.57 marks (28 per cent.) than in 1871–'75. The investigations of Imperial Bureau of Statists show that the average price of ordinary hops, net weight, in Nürnberg was 550.83 marks in 1883, and in 1885 was 104.17 marks. The general rise in the price of hops during the last two decades is ascribed chiefly to the great increase in the consumption of beer. Yet the cultivation of hops has greatly extended. The increase in the production of hops in Germany, from 1874 to 1883, was from 250,000 to 400,000 hundredweight: the increase in all countries was from 900,000 to 1,570,000 hundred weight.

Rape-seed oil.—The price varied from 106.86 in 1855 to 54.09 marks in 1885. The five-year period price varied from 84.66 marks in 1856–'60 to 61.34 marks in 1881–'85. The price in 1885 was lower by 18.45 marks (25 per cent.) than in 1847–'50, and by 16.15 marks (23 per cent.) than in 1871–'75.

Raw sugar.—The price varied from 72.98 in 1871 to 26.59 in 1885. The five-year period price varied from 59.10 marks in 1856–'60 to 41.95 in 1881–'85. The price in 1885 was lower by 19.07 marks (42 per cent.) than in 1847–'50, and lower by 28.19 marks (51 per cent.) than in 1871–'75. The production of sugar has undergone a remarkable change since 1850, as is indicated by the fact that sugar formerly played an important part among tropical products, whereas it is now reckoned as one of the products of European agriculture. At present, the most important factor for the price of sugar is not the state of the crop in the West Indies, Brazil, and Java, but the extent of the beet culture, and the methods of taxing sugar, in Germany, Austria, and France. Apart from temporary rises in price in 1856, 1857, and 1871, which were mainly the result of speculation, the average price of sugar remained fairly constant until 1883. In 1884 and 1885 a great fall in price set in, which is generally explained as due to an overproduction of sugar. The production of sugar in Germany rose from 1,265,000 double hundred weight in 1860 to 11,230,000 in 1884–'85.

Spirits from Indian corn or potatoes.—The price varied from 70.25 marks in 1855 to 33.23 marks in 1885; the five-year period price varied from 58.11 in 1851–'55 to 39.72 in 1881–'85. The price in 1885 was higher by 1.66 marks (5 per cent.) than in 1847–'50, but lower by 10.17 marks (23 per cent.) than in 1871–'75. The price depends chiefly upon the potato crop, but is also affected more or less by speculation. Considerable improvements in production have led to an increase of the output and a fall in prices. A poor potato crop is offset, as has already been noted, by an increased use of Indian corn.

Beef.—The price varied from 1.25 marks in 1877 to 0.58 marks in 1852; the five-year period price from 1.22 marks in 1876–'80 to 0.65 marks in 1851–'55. The price in 1885 was higher by 0.36 marks (50 per cent.) than in 1847–'50, and lower by 0.07 (6 per cent.) than in 1871–'75. The tendency of the price of meat to rise began to appear about 1865, but has not continued since 1880. The price of veal and of mutton show, on the whole, a similar movement. Pork, on the other hand, has not risen so much, which is to be ascribed to the competition of the pork imported from North America.

For *tallow* and *lard* the prices of 1885 are lower by 12.33 marks (15 per cent.) and 25.17 marks (27 per cent.), respectively, than in 1847–'50.

Leather.—The price varied from 485.13 marks in 1866 to 260.74 marks in 1878; and the five-year period price varied from 410.34 in 1861–'65 to 289.42 marks in 1876–'80. The price in 1885 was higher by 66.88 marks (25 per cent.) than in 1847–'50, and was lower by 12.18 marks (4 per cent.) than in 1871–'75.

Bristles and *ox-horns* show a considerable rise in price in recent years. As compared with the period 1847–'50 the prices of these articles in 1885 show a rise of 394.53 marks (111 per cent.) and 44.78 marks (110 per cent.), respectively. Compared with the period 1871-'75, the rise in price is 33.49 marks (5 per cent.) and 10.14 (13 per cent.), respectively.

Herrings.—The price varied from 37.48 marks per ton in 1879 to 18.60 marks in 1851; the five-year period price varied from 34.37 marks in 1876-'80 to 24.13 marks in 1851-'55. The price in 1885 was higher by 9.04 marks (45 per cent.) than in 1847-'50, and it was lower by 1.46 marks (5 per cent.) than in 1871-'75. The great fluctuations in price are the natural results of variations in the catch.

The price of *currants* shows a great rise in some years, as, for instance, in 1856 and 1857, in consequence of the failure of the crop in Greece.

French wine.—The price varied from 97.67 marks per hectoliter in 1880 to 27.83 marks in 1851. The five-year period price varied from 78.40 marks in 1881-'85 to 27.60 marks in 1847-'50. The price in 1885 was higher by 42.81 marks (155 per cent.) than in 1847-'50, and was higher by 9.15 marks (15 per cent.) than in 1871-'75. The cause of the steady rise in the price of Bordeaux wine (the grade chiefly entering into the trade of Hamburg) is to be found in the ravages of the phylloxera in the vineyards of the Gironde.

Coffee.—The price varied from 186.08 marks in 1874 to 82.20 marks in 1851 and 1852; the five-year period price from 160.42 marks in 1871-'75 to 88.80 marks in 1851-'55. The price in 1885 was higher by 17.04 marks (23 per cent.) than in 1847-'50, and lower by 69.22 marks (43 per cent.) than in 1871-'75. The coffee crop in Brazil, Java, etc., of course affects the price of coffee, but the great rise in price between 1873 and 1877 is to be ascribed chiefly to speculation.

Cocoa.—The price varied from 197.42 marks in 1879 to 58.02 marks in 1851; the five-year period price from 151.50 marks in 1876-'80 to 69.96 marks in 1851-'55. The price in 1855 was higher by 95.28 marks (147 per cent.) than in 1847-'50, and higher by 58.42 marks (57 per cent.) than in 1871-'75. Speculation has much to do with the extraordinary fluctuations in the price of this article.

Tea.—The price of tea shows slight fluctuations in comparison with those of coffee and cocoa. In the last decade, 1875-'85, the prices were lower than before.

Rice.—The price varied from 32.58 marks in 1855 to 17.37 marks in 1885; the five-year period price from 28.74 marks in 1851-'55 to 18.53 marks in 1881-'85. The price in 1885 was lower by 16.29 marks (48 per cent.) than in 1847-'50, and is lower by 4.21 marks (20 per cent.) than in 1871-'75. The Suez Canal, by shortening the sea voyage, has contributed to the cheapening of this article.

Indigo, *cane* (for chairs), and *ivory* are considerably higher in price in 1881-'85 than they were in 1847-'50, the changes in price being 48, 76, and 94 per cent. respectively. This rise in price had already taken place in 1871-'75. The price of cochineal, on the other hand, has fallen greatly, and was lower in 1881-'85 than in 1847-'60 by 68 per cent. The cause of this decline is to be found in the progress of chemistry, which has brought out cheap substitutes for cochineal.

The prices of mineral products, with few exceptions, show a remarkable decline in recent years. The cause is to be found in the cheapening and extension of production, in the keen competition of the producers of different countries, and in the fact that demand fails to keep pace with the supply. We present the variations in these prices in tabular form.

Articles.	The yearly prices, in marks, varied between—		The prices, in marks, for five-year periods, varied between—	
Coal..........per 1,000 kilos..	12.31 (1885) and	27.46 (1873)	12.56 (1881-'85) and	20.65 (1871-'75)
Pig-iron........per 100 kilos..	5.14 (1885)	14.36 (1873)	5.80 (1881-'85)	10.52 (1871-'75)
Bar-iron...............do......	14.26 (1885)	34.24 (1873)	15.87 (1881-'85)	25.86 (1871-'75)
Steel ....do......	34.41 (1885)	77.64 (1855)	36.08 (1881-'85)	62.58 (1856-'60)
Lead ....do......	25.08 (1884)	63.08 (1873)	28.25 (1881-'85)	50.28 (1871-'75)
Copper.................do......	110.92 (1885)	240.24 (1856)	130.05 (1881-'85)	214.44 (1856-'60)
Quicksilver ....do......	354.63 (1883)	1,303.50 (1874)	384.27 (1881-'85)	852.06 (1871-'75)
Salt ....do......	1.74 {1866 1867 1885}	4.08 (1857)	1.98 (1866-'70)	3.84 (1856-'60)

Articles.	The price in marks of 1885 compared with that of 1847-'50.	The price in marks of 1885 compared with that of 1871-'75.
Coal..................................per 1,000 kilos..	÷ 3.42 (22 per cent.)	+ 8.34 (60 per cent.)
Pig-iron..............................per 100 kilos..	÷ 2.80 (31 per cent.)	+ 5.38 (51 per cent.)
Bar-iron.....................................do......	÷ 5.54 (28 per cent.)	+ 11.60 (45 per cent.)
Steel ....do......	÷ 19.41 (36 per cent.)	+ 18.89 (85 per cent.)
Lead ....do......	÷ 10.59 (29 per cent.)	+ 24.39 (49 per cent.)
Copper.......................................do......	÷ 61.04 (36 per cent.)	÷ 68.68 (38 per cent.)
Quicksilver ....do......	+461.09 (55 per cent.)	+476.87 (56 per cent.)
Salt ....do......	÷ 2.76 (61 per cent.)	+ 1.42 (45 per cent.)

The considerable fall in the price of quicksilver, since the discovery of the California mines, is of especial importance in the silver question, since it contributes to the cheaper separation of gold from silver. The remarkable rise in price between 1872 and 1876 was brought about by speculation.

Cotton.—The price varied from 436.02 marks in 1864 to 90.60 in 1854; the five-year period price varied from 281.88 marks in 1861–'65 to 99.66 marks in 1851–'55. The price in 1885 was lower by 8.94 marks (8 per cent.) than in 1847–'50, and lower by 47.16 marks (32 per cent.) than in 1871–'75. The enormous rise in price between 1862–'66 was of course caused by the civil war in America. A still greater rise in price would have taken place but for the extension of cotton-raising in East India.

Wool.—The price varied from 432.30 marks in 1860 to 200.72 in 1864; the five-year period price from 417.24 marks in 1856–'60, to 239.55 marks in 1881–'85. The price in 1885 was lower by 157.76 (44 per cent.) than in 1847–'50, and was lower by 131.76 marks (39 per cent.) than in 1871–'75. The chief cause of the lower price of wool is to be found in the extraordinary development of wool-growing in Cape Colony, Australia, the Argentine Republic, and elsewhere.

Silk.—Fluctuations in the price of silk are caused chiefly by the varying yield of silk in China and Upper Italy. The poor product in 1867–'69, and again in 1872–'73, caused a considerable rise in price, which makes the steady fall since 1878 more striking. The price in 1885 was lower by 9.61 marks per kilogram (25 per cent.) than in 1847–'50, and was lower by 14.33 marks (33 per cent.) than in 1871–'75.

The price per kilogram of Milan organizine (22-26) was, in francs, gold, cash, as follows during the last twenty years. We take the figures from a communication received from Elberfeld.

Years.	Highest.	Lowest.	Average.	Years.	Highest.	Lowest.	Average.
1866	114	98	106	1876	120½	62	91½
1867	118	112	115	1877	102	71	86½
1868	140	114	127	1878	85	69	77
1869	127	101	114	1879	89	65	77
1870	121	88	104½	1880	81	66	73½
1871	100	83	91½	1881	65	62	63½
1872	113	99	106	1882	66	61	63½
1873	107	92	99½	1883	61	55	58
1874	92	70	81	1884	60	55	57½
1875	75	66	70½	1885	55	47	51

Of 114 articles mentioned in these tables, 51 have risen in price by more than 5 per cent. in 1885 as compared with 1847–'50, 55 have fallen in price by more than 5 per cent., while in the remaining 8 no essential change had taken place. In comparison with the average prices of the period 1871–'75, the year 1885 shows a rise of more than 5 per cent. in case of but 10 articles. In case of 90 articles a fall of more than 5 per cent. has taken place, while 14 articles show no essential change.

Lack of space prevents further remarks on these tables. These notes have been given chiefly to show that wholesale prices are subject to frequent and great changes; that many different factors influence their course, and that it is exceedingly difficult to get any certain conclusion as to the real level of general wholesale prices at one period compared to another period.

If, nevertheless, we were to state in summary form the results of our investigations on the changes in the purchasing power of gold, we should say that the cost of living, compared with the time immediately preceding the great influx of new gold had become higher, for the great majority of the population of Germany, by 60 or 80 per cent. in the last thirty years. Since the period 1871–'75 a further rise can not, on the whole, be observed. The general level of wholesale prices in the last five years is higher by about 18 per cent. than in the period before 1851, but is lower by about 12 per cent. than in the period 1871–'75. But these statements can be taken and should be taken only as approximate estimates, to be accepted with every qualification.

APPENDIX.

EXTRACTS FROM EXISTING MINT LAWS AND MINT TREATIES, WITH SPECIAL REFERENCE TO THE QUESTION OF STANDARDS.

United Kingdom, British Possessions, and British India.—The act of April 4, 1870 (An act to consolidate and amend the law relating to the coinage and Her Majesty's mint, 33 Victoria, chapter 10), makes the following provisions:

As fixed by the act 56 George III, chapter 68 (of June 22, 1816), 20 pounds Troy of gold, $\frac{11}{12}$ fine, are to be coined into 934½ sovereigns, while 1 pound Troy of silver, $\frac{37}{40}$ fine, is to be coined into 66 shillings of silver.

The sovereign has therefore by law a weight of 123.27448 grains Troy (7.98806 grams metric weight), and contains 7.3224 grams fine gold. The shilling has by law a weight of 87.27273 grains Troy (5.65518 grams) and contains 5.2301 grams of fine silver. The other gold and silver coins are coined in the same proportions.

The tolerance for gold coins is 0.002, and for silver coins is 0.004. The legal-tender weight is, for the sovereign, 122.5 grains (7.93787 grams), for the half sovereign, 61.125 grains (3.96083 grams). No legal-tender weight is fixed for silver coins.

Sovereigns and half sovereigns are legal tender to any amount. Coins under legal-tender weight can be refused. All such coins handed into the Bank of England are cut in two by the bank, and accepted by it only for their weight of standard gold. The loss on light coins is borne by the public.

Any person may carry gold to the mint and have it coined at the rate of £3 17*s.* 10½*d.* per ounce Troy, standard fine. No seigniorage is charged. If gold of greater or less fineness than the standard is brought to the mint, it is there converted into standard gold, at the expense of the owner.

For a long time there has been in the United Kingdom but one mint—that at London.

The Bank of England is obliged to accept all gold brought to it and to pay for it at once at the rate of £3 17*s.* 9*d.* per standard ounce. The difference of 1½*d.* compensates the bank for its trouble and for the loss of interest between the day when gold is brought to the mint and the day when it is returned as coin. The consequence of this provision is that the Bank of England almost exclusively carries gold to the mint.

Silver is coined only on Government account, and is legal tender only up to £2. In the United Kingdom, therefore, the pure gold standard exists.

From time to time considerable amounts of worn silver coins are withdrawn on the Government account and are recoined. There is no specific legal regulation of such action.

At the old, so-called normal, ratio of silver to gold of 1:15½ (the price of silver being 60⅞*d.* per standard ounce) the intrinsic value of the silver was less than their nominal value by 7.82 per cent.

At a ratio of 1:21 (the price of silver being 44⅞*d.* per standard ounce) the intrinsic value is less than the nominal value by 31.96 per cent.

The notes of the Bank of England are legal tender for all payments, except payments by the bank itself.

The Bank of England and the other banks of issue in England are not allowed to issue notes in denominations of less than £5. This restriction does not apply to banks of issue in Scotland and Ireland, which are permitted to issue £1 notes.

In all the colonies of Australasia the coinage system of the mother country and the pure gold standard obtain. Branches of the London mint have been established at Sydney and at Melbourne, which, however, as yet coin only gold. Their coins are legal tender in the United Kingdom and in all British colonies.

In the Dominion of Canada the gold standard exists. The sovereign is a legal tender for $4.86⅔, and an eagle of the United States is legal tender for $10. Silver coin is legal tender only up to $10.

Cape Colony and Natal followed the British coinage system.

In Hong-Kong and the Straits Settlements Mexican piasters are the chief medium of exchange and the silver standard exists. The silver standard exists in Mauritius and Ceylon, the Indian rupee being legal tender.

In British India the silver rupee has been the standard of value since 1835. The rupee weighs 180 grains Troy; it contains 165 grains fine silver and 15 grains alloy. The smaller coins (one-half, one-fouth, one-eighth rupees) are coined in the same proportion. The tolerance for the rupees and half rupees is one-half per cent. in weight and one-half per cent. in fineness.

Rupees and half-rupees are legal tender up to any amount so long as they have not lost more than 2 per cent. in weight. One-fourth and one-eighth rupees are legal tender only up to one-rupee.

Gold mohurs, of the same weight and fineness as the rupees, are coined on demand in pieces of 15 rupees; but neither these mohurs nor other gold coins are legal tender.

There are mints at Calcutta and at Bombay to which every one may bring gold and silver of standard fineness for coinage. There is a seignorage of 1 per cent. for gold and 2 per cent. for silver, and a charge of one-half per cent. and 1 per cent., respectively, for remelting into standard coin. A proclamation by the Indian Government of 1868, announcing that sovereigns would be accepted at public offices for 10 rupees 4 annas, has no result, since gold coins fetch a higher price at the bazars.

The United States.—In the United States the double standard existed by law until 1873; though at times inconvertible paper money drove both gold and silver from circulation. The ratio at which gold and silver were coined varied at different periods, so that the actual standard of value alternated. The original monetary unit was the Spanish piaster, supposed to contain 375.64 grains of fine silver. The act of April 2, 1792, which established the mint, provided as follows:

Gold dollars were to contain 24.75 grains fine Troy, and silver dollars to contain 371.25 grains fine Troy. The ratio was, therefore, 1 : 15. Smaller silver pieces were to be coined in the same proportion as the silver dollars.

The weight of fine gold in the gold coins was reduced by an act of July 31, 1834, to 23.20 grains Troy, and soon afterwards was changed by an act of July 18, 1837, to 23.22 grains Troy, the standard being changed at the same time from $\frac{11}{12}$ to $\frac{9}{10}$. The weight of fine silver in the silver dollar up to the present has remained unchanged. The ratio has therefore been, since 1837, 1 : 16 (accurately, 1 : 15. 988).

After the year 1851 the price of silver was at times so high that it became profitable to melt silver coins. It was necessary to retain within the country a sufficient amount of small coin, and an act of February 24, 1853, reduced the amount of silver in small coins, and provided that they should be coined only on Government account. At the same time they were made legal tender only up to the sum of $5.

In 1870 the Government concluded to pass a revised coinage law with a pure gold standard; silver being demonetized as a legal-tender money. The bill prepared for this purpose was subjected both by Congress and by experts to repeated and careful examination. During three sessions no final decision was reached on it. It did not become law until April 12, 1873, and no opposition was expressed either in the House of Representatives or in the Senate to the abolition of the double standard which was clearly expressed in it. The silver dollars previously coined (of which, however, but few were in existence) maintained their quality as legal tender; but new dollars were not to be coined either on Government or on private account.

The formal complete demonetization of silver as legal-tender money took place still further by section 3586 of the Revised Statutes of 1874, which provided that the silver coins of the United States were to be legal tender only up to the sum of $5.

The new coinage law went into effect on the 1st of December, 1873; but the pure gold standard which it provided for was at first of no practical importance, and attracted no attention. No noteworthy depreciation of silver had as yet taken place, customs duties and interest on the national debt were paid almost exclusively in gold coin, and in general trade paper money was used unless contracts stipulated for coin. But when, in 1875, the resumption of specie payments became probable, and the production of silver in Nevada had greatly increased, a vigorous agitation began for the re-establishment of the double standard, and for a large coinage of silver. A joint resolution of the Senate and the House of Representatives established a commission for investigating the double standard, and a majority of the commission recommended its re-establishment.

Representative Bland accordingly proposed in Congress the establishment of the double standard at the old ratio of 1 : 15.988, with free coinage of silver. This proposition could not be carried, as the bill, in order to be passed over the veto of the President, needed a majority of two-thirds. Such a majority could be obtained only by substituting for free coinage a proviso by which the Secretary of the Treasury is authorized and required to buy silver from time to time, not less than two and not more than four million dollars' worth per month, and to coin it at once into silver dollars.

This act of February 28, 1878, generally known as the "Bland bill" or "Allison bill," put an end to the gold standard which had been established five years before, and made the silver dollars, coined at the old rate, legal tender for all public and private debts, unless other stipulation was expressly made by contract.

The act also authorized the President to invite the Governments of those countries which constitute the Latin Union, and of such other countries as he saw fit, to a conference at which a common ratio between gold and silver was to be reached by international agreement, and a permanent ratio between the two metals assured. This was the occasion, as is well known, of the International Monetary Conference at Paris, which lasted from the 10th to the 29th of August, 1878. As is also well known, the conference did not accept the proposals of the American delegates. It achieved nothing positive, nor did the later monetary conferences, also held at Paris in 1881, from April 8 to May 19, and from June 30 to July 8. On January 1, 1879, specie payments were resumed in the United States. The premium on gold had disappeared several months before. No use was made of the privilege of redeeming legal-tender notes in coin at the Treasury.

The act of February 28, 1878, has remained in force up to the present time (September, 1886), although attempts have not been wanting to bring about its repeal or amendment. On the one hand, Presidents, Secretaries of the Treasury, and members of Congress, have repeatedly recommended that the coinage of silver dollars be stopped; on the other hand, members of Congress have proposed as repeatedly free coinage of silver dollars.

A remarkable preference for well-secured paper money has developed in the United States. The Comptroller of the Currency has called attention to this in one of his earlier reports: "The population throughout the country want paper money, and the banks find it difficult to satisfy this demand. They find a similar difficulty in inducing their customers to accept coin. * * * It was supposed that after seventeen years of paper money the public, which had hardly seen a gold piece during that time, would welcome eagerly the returning yellow metal; but a deep-rooted habit proved stronger than the liking for gold, and the redeemable paper is preferred."

This explains the great variety of paper money which exists in the United States. Besides legal-tender notes and bank-notes, various kinds of certificates circulate.

Gold certificates were first introduced by an act of March 3, 1863, which authorized the Treasury to issue certificates for deposits of gold coin or bars. These certificates, intended primarily for clearing-house use, were also to be received in all public payments. When, on December 1, 1878, the issue of gold certificates ceased, the banks of New York found it necessary to establish a depository of their own, which issues since October 14, 1879, certificates for gold deposits. An act of July 12, 1882, again authorizes the issue of gold certificates by the Treasury on deposits of gold coin in sums of not less than $20.

Silver certificates were introduced by the Bland bill of February 28, 1878. It authorizes every holder of legal-tender silver dollars to carry them to the Treasury in sums of not less than $10, and to receive in exchange silver certificates in the denominations of United States notes. The silver dollars remain in the Treasury for the redemption of the certificates, which are receivable in payment of customs and of all public dues.

Since 1873 the Treasury issues certificates of deposits for legal-tender notes. The Treasury also issues certificates of deposits of subsidiary coin, which are accepted for their face value in public payments. This is a natural corollary to the provision that subsidiary coins are redeemable at the Treasury in legal-tender coins.

When, in 1861, greenbacks were made a legal tender in the United States, the banks associated in the New York clearing-house agreed that clearings should be made exclusively in gold. This rule has been maintained since the resumption of specie payments on January 1, 1879, and has been applied more particularly in regard to silver. An act of

Congress of July 12, 1882, in regard to the renewal of the charters of the national banks, aimed to put an end to the exclusion of silver dollars and silver certificates by providing that no national bank should be a member of a clearing-house at which gold and silver certificates were not accepted in payment of balances. The clearing-houses have, therefore, been compelled formally to abolish their rule, but in practice gold continues to be used in all clearing-house transactions.

In the same way the Secretaries of the Treasury of the United States have hitherto been careful in practice to pay the interest and principal of the national debt in gold, although their obligation to do so is not positive. Moreover, the Treasury holds a reserve of $100,000,000 of gold for the redemption of the greenbacks, whose maximum since 1879 has been $346,681,016.

Germany.—Before the coinage reform brought about by the acts of December 4, 1871, and July 9, 1873, there existed in Germany (apart from Alsace and Lorraine) seven different coinage systems. The gold standard existed in Bremen; elsewhere the silver standard prevailed. The chief provisions of the acts mentioned and of some later supplementary acts are as follows:

The imperial coins take the place of the local coins previously in use; the monetary unit is the mark. The mark is one-tenth of a gold coin called a crown, of which there are struck from a pound (the German pfund) of fine gold 139½ pieces. In addition to the crown of 10 marks, imperial gold coins of 20 marks (double crowns) and imperial gold crowns of 5 marks (half crowns) are struck. The coinage of the last-mentioned pieces has, however, ceased for several years. The imperial gold coins are to contain 900 parts gold and 100 parts copper; therefore 125.55 10-mark pieces, or 62.775 20-mark pieces, weigh 1 pound.

The variation of the pieces from the standard shall not exceed in weight 2½ parts in a thousand, nor in fineness 2 parts in a thousand. Imperial gold coins whose weight is not under the normal weight by more than 5 parts in a thousand, and which have not been diminished in weight by violent or illegal damage, are legal tender in all payments. Imperial gold coins which are not up to this weight, and have been accepted in payment by the Empire, states, provinces, or communes, or by banks or other credit institutions, are not to be reissued. If gold coins have lost by abrasion in consequence of long circulation so much in weight that they are no longer legal tender, they are to be withdrawn and recoined on account of the Empire. Such coins are also to be accepted by the Empire and by the federal states at their nominal value.

Every one is entitled to have gold coined into 20-mark pieces at a charge of 3 marks per pound of fine gold.

The Imperial Bank must pay gold in bars, in redemption of its notes, at the fixed rate 1,392 marks for the pound of gold.

Silver pieces are coined as follows: 5-mark pieces, 2-mark pieces, 1-mark pieces, 50-pfennig pieces, and 20-pfennig pieces. The pound of fine silver is coined into 100 marks. The coins contain 900 parts of silver and 100 parts copper, so that 90 marks in silver coins weigh 1 pound. Silver pieces must not vary in fineness more than 3 parts in a thousand from the standard, and must not vary in weight (except in the case of the 20-pfennig pieces) more than 10 parts in a thousand.

The total amount of imperial silver coins shall not exceed, until further provision is made, 10 marks per head of population.

No individual need accept more than 20 marks of imperial silver coins in payments. They are accepted in any amount by the Empire and by the federal states. The Bundesrat is to designate certain offices which are to redeem imperial gold and silver coins in sums of not less than 200 marks.

Imperial silver coins which have lost in weight, or whose marks have been rubbed off by long circulation, are accepted in payments to the Empire and the federal states, but are to be withdrawn on account of the Empire.

All older German coins are no longer legal tender, and have been withdrawn, with the sole exception of the thaler pieces. Whatever pieces of this kind still exist are legal tender to any amount, like the imperial gold coins, each piece being equal to 3 marks. An act of April 20, 1874, provides that *Vereins-thaler*, coined in Austria before 1867, shall also be full legal tender. Since May, 1879, the sales of silver by the German Government have ceased, and with them the withdrawal of of thaler pieces has ceased. The Chancellor of the Empire is authorized to renew the sales at any time.

An act of January 6, 1867, has authorized the Bundesrat to put the thaler pieces, and the Austrain thalers already referred to, on the same footing as imperial silver coins, that is to say, to make them legal tender only up to 20 marks, the thaler being still reckoned at 3 marks. The Bundesrat is to proclaim such a change in the Reichsgesetzblatt, and it is to take effect at the earliest a month after publication. Since the suspension of silver sales and of the withdrawal of silver thalers, in May, 1879, there is no likelihood that the Bundesrat will make use of the authority so conferred on it. The act of January 6, 1876, is, however, of importance, since it makes certain the power of the Bundesrat to demonetize the thaler pieces—a power which had been doubtful under the language of Article VIII of the coinage act of 9th July, 1873.

Denmark, Sweden, and Norway.—The coinage system of the three Scandinavian countries is based on the treaty concluded between them on December 18, 1872, and on the acts which they have passed in accordance with this treaty.

The pure gold standard replaces the former pure silver standard. On the old system, the Swedish thaler contained 6. 3763 grams of fine silver, the Danish half-thaler contained 6.3205 grams fine silver, the Norway quarter-thaler contained 6.342 grams of fine silver. The new gold unit (the crown divided into 100 öre) contains 0.403226 grams of fine gold. Consequently the ratios for conversion into the new coinage have been, respectively, 1:15.57, 1:15.43, and 1:15.44.

The gold coins are 0.900 fine; the alloy is copper.

Gold pieces of 20 crowns and of 10 crowns are struck, there being 124 of the former and 248 of the latter to the kilogram of gold fine. The 20-crown piece weighs, therefore, 8.96057 grams and the 10-crown piece 4.48029 grams; their weight in fine gold is therefore 8.06452 and 4.03226 grams, respectively. In Sweden pieces of 5 crowns, of a corresponding weight, have also been coined.

The tolerance for the gold coins is, in fineness, 1½ parts in a thousand; and in weight, 1½ parts in a thousand, for 20-crown pieces; 2 parts in a thousand for 10-crown pieces. For large quantities, weighing 10 kilograms, the remedy for both coins is 5 grams.

The gold coins cease to be legal tender in private transactions when they have lost more than 1½ per cent. of their weight. But so long as they have not lost 2 per cent. of their weight they are received in public payments. In Denmark and in Norway the state is obliged to exchange all gold coins which have its impress, and which have lost more than one-half per cent. by abrasion, for full-weight gold coins. The Bank of Norway weighs every coin it receives, and turns over to the state every piece which has lost one-half per cent. of the legal weight.

Every person who brings to the mint gold of the prescribed quality is entitled to have it coined into 20-crown pieces, on paying a charge of one-fourth per cent., and into 10-crown pieces on paying a charge of one-third per cent. In Norway, the Bank of Norway is obliged to buy gold bars at the fixed rate of 2473.80 crowns per kilogram fine, and gold is consequently coined only for the bank.

Silver is subsidiary coin, struck only on Government account. Pieces are coined as follows:

Coins.	Weight.	Fineness in 1,000.	Weight of fine silver.
	Grams.		*Grams.*
2 crowns	15	800	12
1 crown	7.5	800	6
50 öre	5	600	3
40 öre	4	600	2.4
25 öre	2.42	600	1.452
10 öre	1.45	331	0.480

The ratio between gold and silver is accordingly 1:14.88.

Pieces of 1 and 2 crowns are legal tender only up to 20 crowns, other silver coins only up to 5 crowns.

The remedy for all silver coins is in fineness 3 parts in a thousand. In weight the remedy is 3 parts and 5 parts in a thousand, for double crowns and crowns respectively. For the smaller silver coins, in quantities of a kilogram, it is 6.10 and 15 parts in a thousand.

In all three countries specified public offices will redeem subsidiary coins in gold, in sums of 10 crowns or multiples thereof.

The coins of each country, struck in accordance with the treaty, are legal tender in all three countries. The treaty has set no limit to the coinage of subsidiary coins.

The tables printed in Part VI of our Materials show how very slight is the circulation of actual gold in the Scandinavian countries, and in how high a degree the circulating medium, so far as it does not consist of silver, consists of bank notes. For more than sixty years the population of the three Scandinavian countries has been accustomed to bank notes as a convenient and secure circulating medium, and notes are preferred to gold coins as they were formerly preferred to the heavy silver coins. Exceedingly few coins appear in ordinary transactions.

The Netherlands.—The double standard was abolished in the Netherlands by the coinage law of November 26, 1847, and in its place a single silver standard was adopted. The unit was the florin (gulden) containing 10 grams of silver, of a fineness of 0.945. By acts of June 6, 1875, and May 10, 1876, the single gold standard has been introduced, by which the unit has made and still remains one-tenth part of a gold coin of 10 florins, containing 6.720 grams of gold of a fineness 0.900—that is, containing 6.048 grams of fine gold. The earlier Wilhelm d'or had contained 6.0561 grams of fine gold. The remedy is for the 10-florin pieces, in fineness 1½ parts in a thousand, in weight 2 parts in a thousand. Up to the present no gold coins except 10-florin pieces have been struck. Private persons are entitled to have 10-florin pieces struck at the mint, in so far as the mint is not busy on state account. The mint charge is determined by the administration from time to time, but may not be set higher than 5 florins per kilogram of mint gold. As a rule, the Bank of the Netherlands, which is ready to buy gold at prices fixed at its discretion, causes gold to be coined.

The coinage of larger silver pieces is discontinued. Subsidiary silver coins in denominations of 25 cents or less are coined on Government account.

The silver coins of 2½, 1, and ½ florins remain for the present full legal tender, side by side with new gold coins. These old silver pieces, as stated above, contained 9.45 grams of fine silver to the florin. The change to a gold standard, therefore, took place on an assumed ratio of 1:15.625. The silver coins still exist in large quantity, and are the most important medium of exchange in domestic transactions, although their intrinsic value is 30 per cent. less than their nominal value. In foreign trade gold exclusively is used, as the Bank of the Netherlands is prepared to pay on demand gold for this purpose.

In the colonies of the Netherlands the coinage system of the mother country obtains in the main, there being a difference only in regard to the small subsidiary coins.

In *France*, *Italy*, *Belgium*, and *Switzerland* a uniform coinage prevails. These countries (with Greece, in which, however, an inconvertible paper money is for the present in use) form the so-called Latin Union. This union was originally formed by a treaty concluded at Paris, December 23, 1865, and has been continued by later treaties to the close of 1885. By a treaty of November 6, 1885, and by a supplementary treaty of December 12, 1885, the continuance of the Latin Union was agreed on, after long and heated discussion, till January, 1891.

The coinage system, which follows that of the French coinage act of March 28, 1803, is as follows:

Coins, francs.		Fine metal.		Weight.	
		Fineness.	Tolerance.	True weight.	Tolerance.
Gold	20	900	2	6.45161	2
	10			3.22580	
	5			1.61290	3
Silver	5	900	2	25	3
	2	835	3	10	5
	1			5	
	0.50			2.5	7
	0.20			1	10

The 20-franc piece, therefore, contains 5.8065 grams of fine gold, the silver 5-franc piece 22.5 grams of fine silver; the franc-piece 4.175 grams of fine silver. The coinage ratio is, therefore, for the 5-franc pieces 1:15.5, for the smaller silver coin 1:14.3806.

Each contracting state agrees to receive the coins of the other states in payments to itself, with the proviso, however, that no coins are to be received that have lost one-half per cent. or more of their legal weight.

The further coinage of silver 5-franc pieces has been stopped for the present, and can only be resumed by the unanimous agreement of all the contracting countries. But the power to resume their coinage without such unanimous agreement is reserved, on the fulfillment of certain specific conditions.

The contracting Governments agree to accept each others' 5-franc pieces in public payments.

Each contracting country agrees to accept from the other contracting countries those 5-franc pieces whose weight is less by 1 per cent. than the minimum permitted to be coined. In France the 5-franc pieces are accepted on Government account by all branches of the Bank of France.

Subsidiary silver coins are to be melted and recoined by the Government issuing them, as soon as their weight has lost 5 per cent. by abrasion or the coinage marks have been worn off. Subsidiary coins are legal tender up to 50 francs for individuals of the country issuing them. Each state will accept from its subjects without limit subsidiary coins of its own issue. Each of the contracting states will receive subsidiary coins, struck by one or more of the other contracting states, in sums of 100 francs at any one payment. Each of the contracting countries agrees to redeem in gold coins, or in silver 5-franc pieces, subsidiary coins issued by it, and presented for redemption by its own subjects or by another contracting country; but no sum under 100 francs is to be redeemed.

Subsidiary coins can be issued by the contracting countries only to the amount of 6 francs per head of population. This sum can be exceeded under certain specific conditions, but the excessive issues have been comparatively small.

The conventions of November 6, 1885, and of December 12, 1885, contain a number of specific provisions as to the manner in which the redemption of silver 5-franc pieces is to take place, in case the union should be dissolved.

THE PRICES OF COMMODITIES IN 1886 COMPARED WITH THE PRICES OF PREVIOUS YEARS.

[The translator adds to Dr. Soetbeer's Materials a translation of two articles published by him in the Hamburg Börsen-Halle, Nos. 181 and 182, in which he continues his investigations of general prices for the year 1886.]

I.

In the course of 1886 the opinion has been frequently expressed, and has been maintained in commercial papers, that the fall in prices which had continued steadily till 1886, had at last come to an end, and that there were signs of a turn in the tide, toward rising prices. But in other quarters it has been said—and here, particular commodities were cited, as they were in support of the first-mentioned view—that the fall in prices had continued in the year 1886, even though not in so great a degree as in previous years. Which view is correct? In any case, no considerable change in the general level of prices is likely to have taken place in 1886 as compared with former years, since such a difference of opinion exists. But even if the change that may have taken place is a slight one, the continued discussion of the silver question causes much interest to attach to a careful and impartial investigation of the actual range of prices in 1886.

For the solution of this problem we may turn first of all to those statistics of prices which are now admitted on all hands to be the most complete and trustworthy. These are the statistics of the Hamburg Bureau of Trade Statistics, which have been prepared carefully on a consistent method since 1847, and have latterly been presented in com~~plete form in~~ the second edition of the well-known "Materials towards the Elucidation of the Economic Conditions affecting the Precious Metals." A well-deserved confidence in the results of these publications from 1847 to 1885 has been generally expressed, and a similar confidence will be accorded to the corresponding results of the lately published "Tabular Statements of the Trade of Hamburg in 1886." It must always be remembered, of course, that these results like others, while deserving attention, are yet not a conclusive indication of the general level of prices. But, before presenting the average prices of 1886, as indicated by the Hamburg statistics, we wish to present a few remarks and statements based on the recently published statistics of the trade of the German Customs Union with foreign countries in the year 1886, published by the Imperial Statistical Bureau.

Ever since careful statistics of foreign trade were undertaken, the Imperial Statistical Bureau has endeavored to ascertain each year the prices of the individual commodities, and thereby to secure statistics of values. Estimates for this purpose are prepared by the collection and comparison of statements of prices. These statements are derived from several sources—from the statistics of prices which the Hamburg Bureau of Trade Statistics obtains from the prices current of that place, and which give the average prices of almost every commodity dealt in; from the regular monthly memoranda of prices sent in by several chambers of commerce for important articles of trade; and from communications from a large number of commercial bodies in regard to the average annual prices of commodities in their districts.

It is impossible to obtain separate prices for all commodities for which the prices differ appreciably; still less is it possible to obtain separate prices for each quality and grade of the same commodity. The more important articles of foreign trade must be lumped together under certain heads, in which different grades and qualities are included; and it has been necessary sometimes to put essentially different commodities under the same head. Estimates of this kind are necessary for statistical purposes, yielding, as they do, an average price for a certain number of commodities. Moreover, it is necessary to present the general conditions of the trade of the whole territory, and especially to show what parts are played in imports and exports by the different classes and qualities of commodities. The average prices of each head are estimated from the prices—easily ascertainable from men of business—of the different articles grouped under that head. It is of course impossible to get actual average prices for all classes, especially for such as include commodities of varying quality. But some estimate of their value is necessary in order to obtain a statement of the total value of exports and imports. However, these estimated values contribute little to the total, as compared with the classes for which sufficiently exact prices can be ascertained. With few exceptions, prices are reckoned at so much per hundred kilograms net weight, and refer to the calendar year. We must first learn something of the fluctuations in price during the year of each article or class, and then an average yearly price can be secured. The prices of imported and of exported articles are estimated separately. The price of imported articles is taken to be the sum which is paid by the home country to the foreign country; the price of exported articles is taken to be the sum paid by the foreign country to the home country. Duties are not reckoned as part of the prices of imported articles, nor are drawbacks considered in reckoning the prices of exported articles.

The Bureau of Statistics each year summons experts to aid it in preparing prices. The experts are divided into six sections, based on a systematic classification of the commodities. For the year 1886 thirty-eight gentlemen, of whom the majority had taken part in previous years, were employed in estimating the prices.

These average prices, in which there were at the outset many mistakes, have become more accurate and trustworthy from year to year. They have been compiled in essentials on the same method, and therefore comparisons can be readily made.

We now present a general comparison of the average prices for the years 1885 and 1886 of a certain number of important articles. We pay attention to but few of those for which no change in price is indicated between 1885 and 1886. We arrange the articles on the plan followed in the tables of the Materials.

Article.	Imported or exported.	Quantity.	Prices in—	
			1885.	1886.
			Marks.	*Marks.*
Wheat	Imported	100 kilograms	13.50	14.60
Rye	do	do	11	9.70
Barley	do	do	12.80	12.90
Hops	do	do	280	300
Linseed oil in barrels	do	do	45	40
Sugar, raw	Exported	do	28	22.91
Spirits	do	do	31	29.50
Horses	Imported	Piece	860	950
Cows	do	do	400	375
Pigs	do	do	96	95
Butter	do	100 kilograms	150	150
Lard	Exported	do	71	66
Cattle hides	do	do	180	170
Salt herring	do	do	29	26.50
Raisins	do	do	45	40
Wine in casks	do	do	55	55
Coffee	do	do	95	112
Cocoa	do	do	152	160
Rice	do	do	19	18.50
Tobacco leaves	do	do	160	150
Coal	do	do	.90	.92
Pig iron	Imported	do	4.40	4.30
Iron tools	Exported	do	100	90
Lead	do	do	21.50	25
Zinc	do	do	28.50	28.50
Tin	Imported	do	180	197.50
Copper	do	do	95	85
Coal oil	do	do	14.50	13
Chili saltpeter	do	do	20	18
Cotton	do	do	109	99
Cotton yarn, Nos. 17–45	do	do	180	173
Cotton cloth	Exported	do	375	370
Cotton hose	do	do	850	850
Flax	Imported	do	70	78
Linen	Exported	do	450	475
Silk, raw	Imported	do	4,400	4,800
Wool	do	do	270	310
Woolen goods	Exported	do	550	600
Aniline, etc	do	do	750	680

The uncertainties and difficulties attending such an estimate of average prices are obvious. The degree of confidence felt in the accuracy of the stated balance of trade depends in Germany, as it does in France, on the trustworthiness of the statistics of prices. If the average prices for important articles are taken to be higher or lower by a few percents, the balance of trade may be made to appear favorable or unfavorable. Absolute accuracy is, of course, impossible, and it may be a question whether the British Trade Statistics do not use a better method. Their method consists in obtaining statements from business men themselves, of the value of the imported and exported commodities; from these statements the average prices of the different classes of goods are secured by calculation from the totals of the declared values. But it is certain that the estimates for the German trade have been made with great thoroughness and care. They are, therefore, well adapted for securing comparative statements of the general level of prices—statements which, it is true, apply primarily to Germany, but are not likely to vary much from those of the world's trade.

The Imperial Statistical Bureau has done much to render such comparisons easy. It has given for each year the total value of the exports and imports, not only for that year, but also the value at the prices of the previous year. On this method, regard is paid not only to the changes in individual articles, but also to the greatly varying importance of one commodity as compared with another.

	Marks.
The total of all the commodities imported into Germany in the year 1886 was, on the prices of that year	2,888,398,000
The value of the same commodities at the prices of the year 1885 would have been	2,899,641,000
The difference between the two sums is	11,243,000

This indicates that the prices of 1886 were lower than those of 1885 by 0.26 per cent.

	Marks.
The total value of the exports in 1866 was, at the prices of that year	2,985,553,000
The value of the exports at the prices of 1885 would have been	3,059,694,000
Difference	74,141,000

This indicates a fall in prices of 2.42 per cent.

In general, considering both exports and imports, we might conclude that the level of prices in Germany in 1886 had been lower than in 1885 by 1.40 per cent.

It will be of interest to present the same comparison for earlier years, based on the same materials and prepared on the same methods. The publications of the Imperial Statistical Bureau enables us to make such a comparison for the years since 1882.

The value of the total exports and imports of Germany, as derived from average prices estimated for each year, and the total value of those exports and imports as derived from the estimated prices of each preceding year, were as follows: *

	1882.		Difference between prices of 1882 and 1881.	1883.		Difference between prices of 1883 and 1882.
	By the prices of 1882.	By the prices of 1881.		By the prices of 1883.	By the prices of 1882.	
	Marks.	*Marks.*	*Per ct.*	*Marks.*	*Marks.*	*Per ct.*
Imports	3,164,667,000	3,171,149,000	—.20	3,290,896,000	3,342,122,000	−1.53
Exports	3,244,721,000	3,221,493,000	+.72	3,335,000,000	3,410,856,000	−2.22

	1884.		Difference between prices of 1884 and 1883.	1885.		Difference between prices of 1885 and 1884.
	By the prices of 1884.	By the prices of 1883.		By the prices of 1885.	By the prices of 1884.	
	Marks.	*Marks.*	*Per ct.*	*Marks.*	*Marks.*	*Per ct.*
Imports	3,284,923,000	3,459,725,000	−5.05	2,944,431,000	3,202,438,000	−8.05
Exports	3,269,401,000	3,486,341,000	−6.22	2,860,257,000	3,093,282,000	−7.53

If we combine now the prices of exports and of imports, and take the mean between them, we get the following changes in prices:

	Per cent.
1882 against 1881—a rise of	0.26
1883 against 1882—a fall of	1.87
1884 against 1883—a fall of	5.63
1885 against 1884—a fall of	7.79
1886 against 1885—a fall of	1.40

We see here a continued fall in general prices since 1883, which has taken place, however, at a slackened rate during last year as compared with the two previous years.

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* In 1885 and 1886 the exports and imports of gold and silver, in bullion and coin, are excluded from the figures.

II.

The preceding paragraphs considered changes in the general level of prices in the years from 1882 to 1886, as indicated by the statements of the Imperial Statistical Bureau in regard to the foreign trade of Germany. We now present the promised statement based on the average prices ascertained by the Hamburg Bureau of Statistics. They are prepared on the same method, and present the same sort of index numbers, as the tables printed in our Materials for the years from 1847 to 1885.

We refer to the Materials for a description of the sources and the method on which these figures rest. The space here at our disposal does not permit us to present separately the prices of each of the hundred articles or to make comparisons with each preceding year.

Articles.	1847–'50.		1871–'75.		1885.		1886.	
	Per 100 kilos.	Index. No.	Per 100 kilos.	Index. No.	Per 100 kilos.	Index. No.	Per 100 kilos.	Index. No.
	Marks.		*Marks.*		*Marks.*		*Marks.*	
Wheat	19.44	100.00	23.72	122.02	15.33	78.86	15.06	77.47
Rye	12.24	100.00	17.56	143.46	12.21	99.75	11.05	90.28
Corn and potato spirit	31.57	100.00	43.40	137.79	33.23	105.26	24.07	76.24
Hops	89.76	100.00	304.68	339.44	218.11	242.99	191.49	213.34
Raw sugar	45.66	100.00	54.78	119.97	26.59	58.23	24.04	52.65
I.—Agricultural products, (20, including the 5 preceding)		100.00		144.90		110.75		101.31
Beef	0.72	100.00	1.15	159.72	1.08	150.00	1.08	150.00
Milk	0.07	100.00	0.12	171.43	0.12	171.43	0.11	157.14
Butter	1.20	100.00	2.26	188.33	2.12	176.67	2.01	167.50
Leather	263.38	100.00	342.44	130.02	330.26	125.39	336.53	127.77
Herrings	20.25	100.00	30.75	149.85	29.29	144.64	26.58	131.26
II.—Meat and fish products, (22, including the 5 preceding)		100.00		154.57		140.45		133.53
Raisins	42.72	100.00	58.14	136.10	51.02	119.43	47.25	110.60
Currants	47.94	100.00	44.36	92.53	37.43	78.10	43.00	89.70
Palm oil	105.90	100.00	98.26	92.79	92.52	87.37	86.65	81.82
French wine	27.60	100.00	61.26	221.93	70.41	255.11	73.25	265.40
III.—Southern products, (7, including the 4 preceding)		100.00		131.50		123.78		122.44
Coffee	74.16	100.00	160.42	216.32	91.20	122.98	99.49	134.16
Cocoa	64.86	100.00	101.72	156.83	160.14	246.90	137.78	212.43
Tea	288.96	100.00	282.74	97.85	206.47	71.45	203.47	70.41
Pepper	55.08	100.00	126.52	229.70	152.50	276.87	159.23	289.09
Rice	33.66	100.00	21.85	64.11	17.37	51.60	16.37	48.63
IV.—Tropical products, (14, including the 5 preceding)		100.00		130.72		116.39		115.44
Coal	15.73	100.00	20.65	131.28	12.31	78.26	11.88	75.52
Pig-iron	7.44	100.00	10.52	141.40	5.14	69.09	4.77	64.11
Steel	53.82	100.00	53.30	99.03	34.41	63.94	31.33	58.21
Zinc	31.08	100.00	46.34	149.10	25.14	80.89	27.28	87.77
Copper	171.96	100.00	179.60	104.44	110.92	64.50	103.32	60.08
Salt	4.50	100.00	3.16	70.22	1.74	38.67	1.62	36.00
V.—Minerals and metals, (14, including the 6 preceding)		100.00		116.90		74.23		70.52
Cotton	111.36	100.00	149.58	134.32	102.42	91.97	96.46	86.62
Wool	360.24	100.00	334.24	92.78	202.48	56.21	187.35	52.01
Flax	94.80	100.00	123.12	129.87	148.20	156.33	132.34	139.60
Silk	3,863.64	100.00	4,335.94	112.22	2,902.70	75.13	2,686.13	69.52
VI.—Textile materials (7, including the 4 preceding)		100.00		117.17		95.89		89.76
VII.—Miscellaneous, 11 articles (guano, India-rubber, gutta-percha, rosin, tar, soda, etc.)		100.00		114.98		81.35		78.75

Glancing over the 29 articles and classes of articles, we find that the prices of 1886 were higher than those of the period 1847–'50, when the new supplies of gold had not yet been discovered, for the following articles: Hops, meat, milk, butter, leather, herrings, raisins, wine, coffee, cocoa, paper, flax. On the other hand, prices are lower for wheat, rye, spirits, sugar, currants, palm-oil, tea, rice, salt, coal, iron, steel, copper, zinc, cotton, wool, steel.

For agricultural products, as a whole (Group I), the prices of 1886 are about the same as those of 1847–'50, there being a rise of only 1.31 per cent. For animal products (Group II) there is a rise of 33.53 per cent., for southern articles (Group III) a rise 22.44 per cent., and for tropical articles (Group IV) a rise of 15.45 per cent. On the other hand, the tables indicate that the prices of 1886 were lower than those of 1847–'50, as follows: For mineral metals (Group V), by 29.48 per cent.; for textile materials (Group VI), by 10.24 per cent.; and for miscellaneous articles (Group VII), by 21.25 per cent.

Taking the whole 100 articles together, we find that the general level of prices in 1886 was higher than in 1847–'50 by 4.96 per cent.

The case is very different if we compare the average prices of 1886 with those of the period 1871–'75. Here we find that of the 29 articles mentioned only 4 are higher in price: wine, cocoa, pepper, and flax. All others have fallen in price, and some have fallen very much.

This becomes plain if we compare the prices of different groups in 1871–'75 and in 1886. Taking 100 to indicate the prices of 1871–'75, we find that a fall in prices had taken place, as follows:

	Per cent.
GROUP I.—Agricultural products	31
GROUP II.—Animal products	23
GROUP III.—Southern products	7
GROUP IV.—Tropical products	12
GROUP V.—Minerals and metals	40
GROUP VI.—Textile materials	24
GROUP VII.—Miscellaneous products	32

For all the 100 articles the comparative prices show a fall in 1886, compared to 1871–'75, of 22 per cent.

If we make a similar comparison with the year immediately preceding, we find that the figures of the Hamburg Bureau of Statistics indicate that the prices of 1886 as compared with those of 1885 show a further fall of 4 per cent.

No decided opinion can be expressed as to whether the figures for the year 1887, when completed, will show at last a rise in the general level of prices.

CHARTS
ON THE
SILVER QUESTION,
PREPARED ON THE BASIS OF THE
MATERIALS
TOWARD THE ELUCIDATION OF THE ECONOMIC CONDITIONS AFFECTING THE PRECIOUS METALS, ETC.,
COLLECTED BY
AD. SOETBEER.

I. Average Annual Production of the Precious Metals, 1493–1885.
II, III. Production of the Precious Metals, 1493–1885, by Periods.
IV, V. Production of the Precious Metals, 1493–1885, by Countries.
VI. Flow of the Precious Metals to British India, 1851–1885.
VII. Ratio of Silver to Gold, 1501–1885.
VIII. Movement of Prices, 1851–1885.

REMARKS ON THE CHARTS ON THE SILVER QUESTION.

The charts on the silver question are meant to give the means of grasping readily the results reached in the second edition of our "Materials toward the elucidation of the economic conditions affecting the precious metals, etc."

The needful explanations are printed on the chart, and the data on which they are based may be found in the Materials. But on certain points some special explanation may be of service.

As is explained in the preface and introduction to the second edition of the Materials, the value of silver is there reckoned, in terms of (gold) German marks, not on the old plan of assuming a permanent ratio of $15\frac{1}{2}$ to 1, but according to the actual ratio at different periods since 1493. The same method of calculation is used for the charts. The statements of the value of the silver product, and of its proportion to the value of the gold product, therefore, vary from former statements based on the old method. The value of the annual average product of silver from 1881 to 1885 is ascertained by us to be 428,760,000 marks (for 2,862,000 kilograms) or 50.7 per cent. of the total value of the product of the precious metals. On the old method, the value would be 515,160,000 marks, or 55.3 per cent. of the total value.

We repeat, again, the qualification that the figures of the production of the precious metals represent only approximate estimates.

We add to the statement of the ratio of gold to silver, the figures of the remarkable fluctuations in the price of silver which took place during the present year (1886) and caused much excitement in the silver trade. The London price of silver per ounce standard fine ($\frac{37}{40}$) was:

Month.	Price.	Month.	Price.
	d.		*d.*
January	$46\frac{1}{2}$ to $46\frac{15}{16}$	June	$44\frac{11}{16}$ to 45
February	$46\frac{1}{2}$ to $46\frac{7}{8}$	July	$42\frac{1}{2}$ to $44\frac{5}{8}$
March	$41\frac{11}{16}$ to $46\frac{13}{16}$	August	42 to $42\frac{1}{2}$
April	$46\frac{1}{16}$ to $46\frac{11}{16}$	September	$42\frac{5}{8}$ to 45
May	45 to $45\frac{7}{8}$		

The price of 42 pence (or 124 marks per kilogram of silver) corresponds to a ratio of 22.45 kilograms silver to 1 kilogram gold.

In the chart showing the flow of precious metals to India, data are wanting for the value of rupees from 1859 to 1861. This is the result of the Indian Government's having paid in those years its debts in England from the proceeds of loans contracted there; in consequence hardly any council bills were sold. It should be stated, also, that in 1855 the net imports of silver to British India were only 296,000 rupees, and that in 1879 there was a net export of gold of 8,962,000 rupees. The years for this chart are the Indian fiscal years, ending 31st March of the years designated.

The chart showing the movement of prices (in regard to whose calculation we refer to the explanations in the Materials) is based on data from the Hamburg Bureau of Tràde Statistics and from the London Economist. We have no figures from the Economist for January 1, of the years 1852–'57, and none for July 1 of the years 1852, 1854–'56, and 1858–'63. The remarkably high index numbers reached by that journal for 1864 are (the index numbers for 1845–'50 being 100 or 2,200), 172.14, or 3,787, for January 1, and 172.37, or 3,792, for July 1.

The following 114 articles were embraced in the calculations of the Hamburg Bureau.

I.—*Agricultural and related products* (20): Wheat, wheat flour, rye, rye flour, oats, barley, malt, buckwheat, pease, beans, potatoes, hops, clover-seed, rape-seed, rapeseed-oil, linseed-oil, oil-cake, raw sugar, refined sugar, spirits from corn and potatoes.

II.—*Animal and fish products* (22): Beef, veal, mutton, pork, milk, butter, cheese, tallow, lard, hides, calf-skins, leather, horsehair, bristles, feathers, bones, ox-horns, mucilage, eggs, herrings, cured fish, fish-oil.

III.—*Southern products* (7).

IV.—*Tropical products, exclusive of cotton* (19).

V.—*Minerals and metals* (14); Coal, pig-iron, bar-iron, steel, lead, zinc, tin, copper, quicksilver, sulphur (raw), Chili saltpeter (raw), salt, lime, cement.

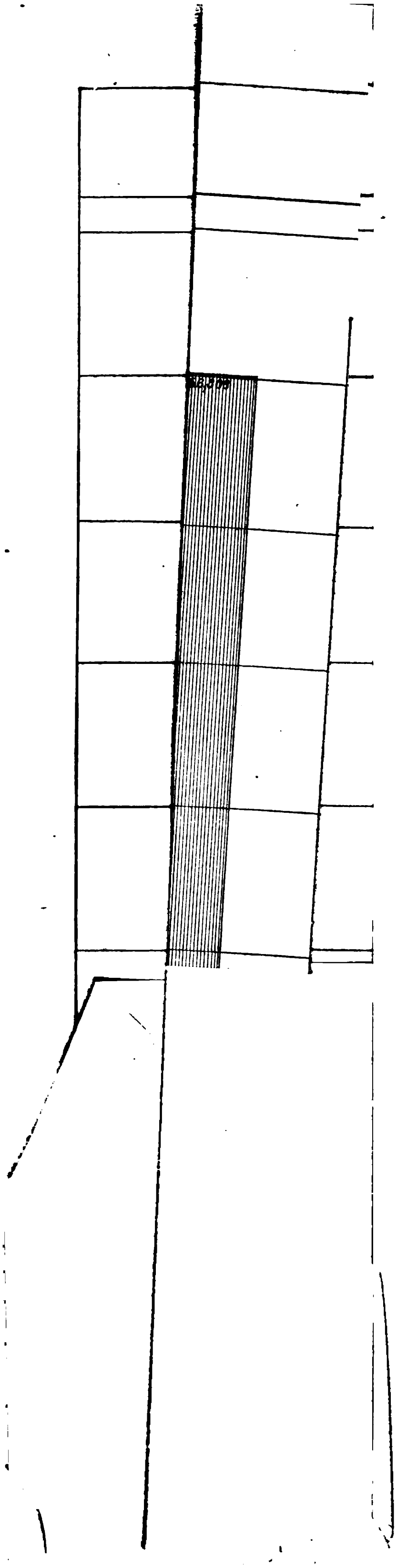
VI.—*Textile materials* (7).

VII.—*Miscellaneous* (11).

VIII.—*British manufactures, articles of export* (14).

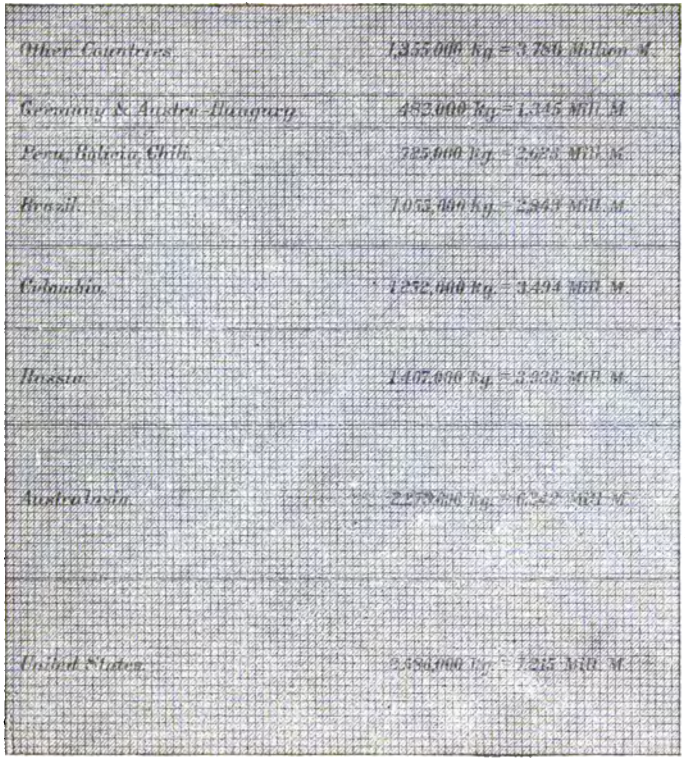
The London Economist considers the following 22 articles: Coffee, sugar, tea, tobacco, wheat, fresh meat, cotton, silk, flax and hemp, wool, indigo, oils, timber, tallow, leather, copper, iron, lead, zinc, Pernambuco cotton, cotton yarn, cotton cloth.

Finally, we may mention that the chart refers only to wholesale prices. But the purchasing power of money is not shown by wholesale prices alone. Retail prices, rents, the wages of physical and mental labor, and, looking at the matter from another point view, the cost of living in the manner proper to one's station in life—all are to be considered. On this point also we must refer for further explanation to the Materials.



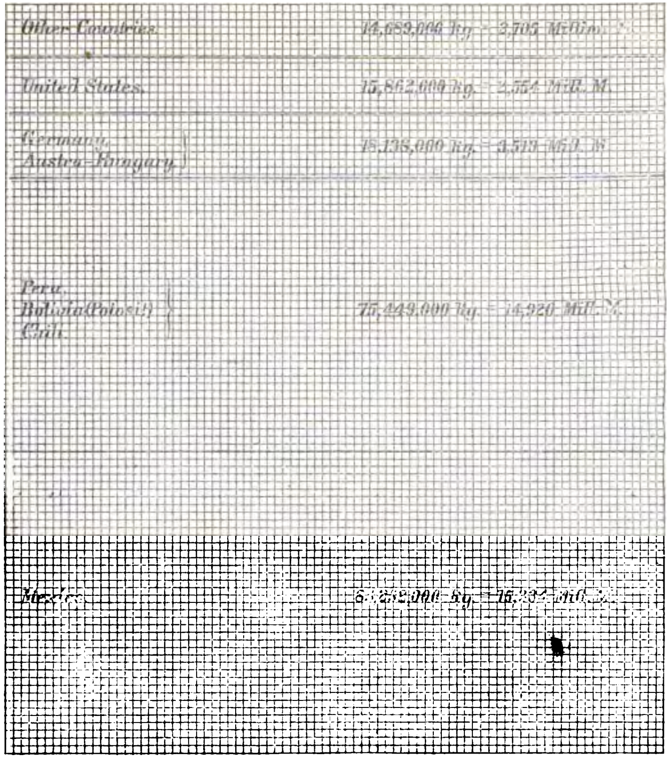
Production of the Precious Metals, 1493-1885, by Countries.

IV. Gold.



One □ cm. = 125,000 kg. A space 1 mm. high and 88.9 mm. wide = 111,350 kg.

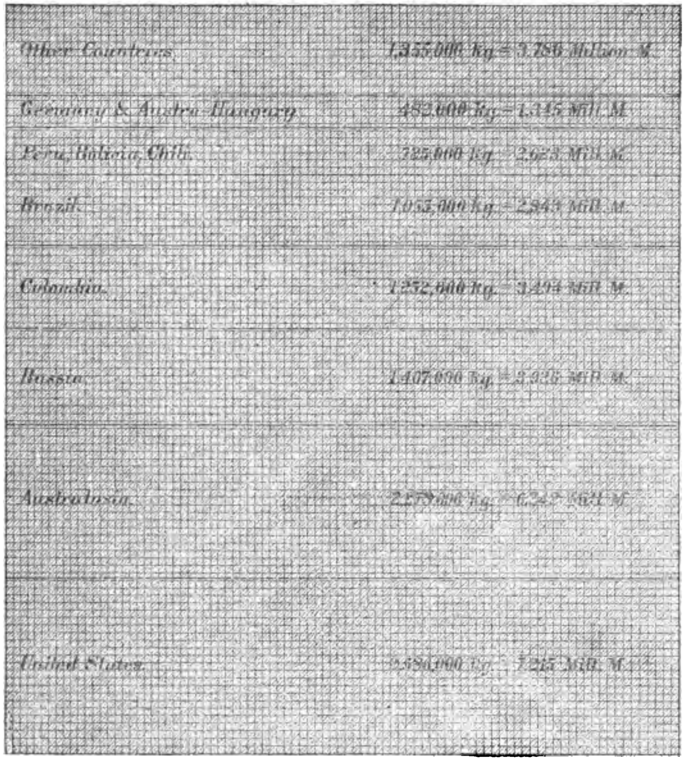
Silver. V.



One □ cm. = 2,500,000 kg. A space 1 mm. high and 829 mm. wide = 2,073,900 kg.

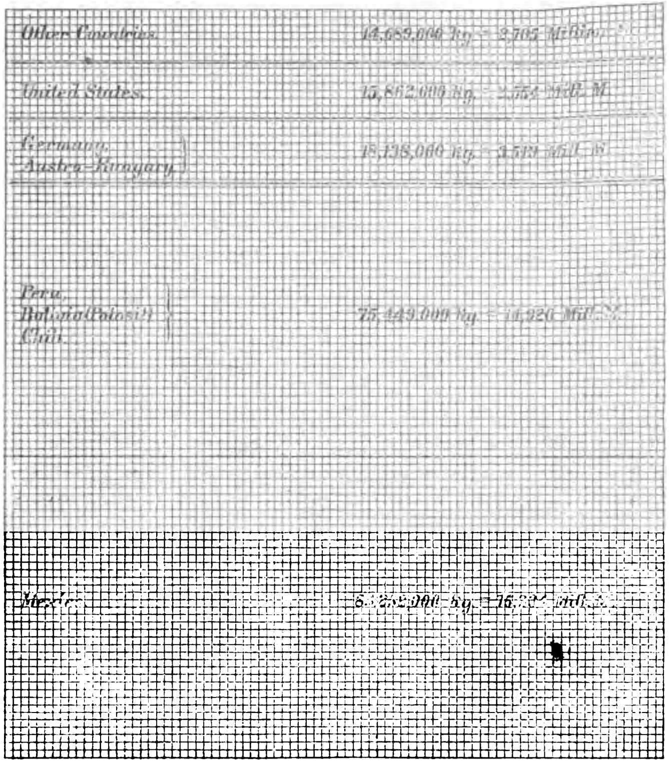
Production of the Precious Metals, 1493-1885, by Countries.

IV. Gold.

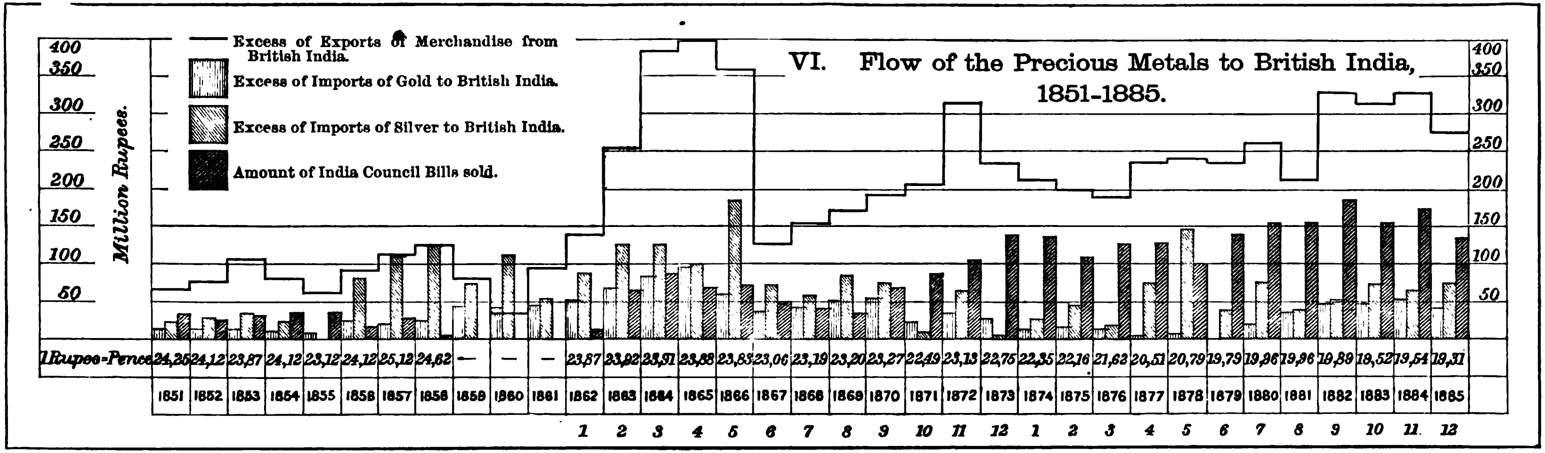


One □ cm. = 125,000 kg. A space 1 mm. high and 88.9 mm. wide = 111,350 kg.

Silver. V.



One □ cm. = 2,500,000 kg. A space 1 mm. high and 829 mm. wide = 2,073,900 kg.



VI. Flow of the Precious Metals to British India, 1851-1885.

f Silver to Gold, 1501-1

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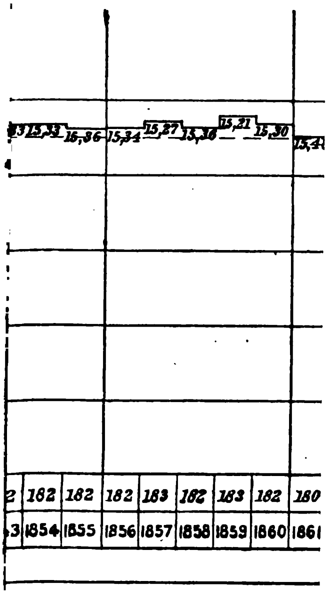

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